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ABSTRACT

This document is comprised of six issues (1996 through 1998) of a biannually-published journal featuring research studies, theoretical essays, and classroom practice articles about the development and education of kindergarten children. The spring 1996 issue contains the following: (1) "Portfolios and Young Children: A Natural Match" (Adrienne Herrell); (2) "Cognitive Development of Children Four through Six Years of Age: Implications for the Classroom" (Violet Robinson); (3) "Choice Behavior in Kindergarten: A Qualitative Study" (Michael Ballard-Rosa); and (4) "Balanced Literacy within a Kindergarten Study of Woodland Animals" (Helen Faul). The winter 1996 issue contains: (1) "Piaget's Symbolic Function and the Foundation of Reading" (Jeanette Gallagher); (2) "Drawing To Write: The Role of Drawing in the Writing Processes of Kindergarten and Primary Grade Children" (Catherine DuCharme); (3) "Developing Conventional Spelling: Temporary Spelling and the Transition Point" (Adrienne Herrell); and (4) "Zoology in the Early Childhood Curriculum" (Saundra Plett). The spring 1997 issue contains: (1) "Reading and Language; Piaget's Symbolic Function and the Foundation of Reading (Part 2)" (Jeanette Gallagher); (2) "A Comparison of the Effects of Teaching Phonics through Literature and Teaching Phonics through Spelling on First Grader's Reading, Writing and Spelling Competence" (Theresa Roberts and Anne Meiring); (3) "Exploring Math Concepts with Children's Books" (Belle Akers); and (4) "Transformation towards a Balanced Curriculum" (Christine Carling). The winter 1997 issue contains: (1) "Reading and Writing; Piaget's Symbolic Function and the Foundation of Reading (Part 3)" (Jeanette Gallagher); (2) "Wearing Many Hats or How Kindergarten Teachers Adorn Their Heads" (Candace Kaye); (3) "Cross-Cultural Peer Interactions in a Two-Way Bilingual Immersion Kindergarten Classroom" (Catherine DuCharme); and (4) "Teaching Linear Measurement" (Carol Gossett). The spring 1998 issue contains: (1) "Imagery and Drawing; Piaget's Symbolic Function and the Foundation of Reading (Part 4)" (Jeanette Gallagher); (2) "The Role of Choice

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in the Literacy Development of Young Children" (Daniel Meier); (3) "Kindergarten Policies: Another Look at the Research" (Diana Guerin, Julie Sandwell, and Lisa Lovil); and (4) "Literacy Workshops: A Process that Empowers Children To Read and Write in Kindergarten" (Deborah Meng). The winter 1998 issue contains: (1) "Symbolic Play; Piaget's Symbolic Function and the Foundation of Reading (Part 5)" (Jeanette Gallagher); (2) "Addressing Kindergarten Students' Conflict Behavior: Encouraging Social-Cognitive Development" (Pamela Lane-Garon); (3) "Building Parent-Teacher Partnership through Dialogue Journals" (Harriet Neal and Joyce Daniels); and (4) "Creating Music in Kindergarten" (Gwendolyn McGraw). (KB)

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# Kindergarten Education: Theory, Research, and Practice, 1996-1998

Violet B. Robinson, Editor

Volumes 1-3
Spring 1996-Winter 1998

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# Kindergarten Education: Theory, Research, and Practice

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*Volume 1, No.1 • Spring 1996*

*A Journal of the California Kindergarten Association*

**Kindergarten Education: Theory, Research and Practice** is a journal published biannually, as a membership benefit, by the California Kindergarten Association (CKA). The journal features original research studies, theoretical essays, and classroom practice articles primarily about the development and education of kindergarten children but also includes articles concerning preschool and the early primary grades. The logo of the journal represents the interrelationships of theory, research, and practice. These interrelationships should be evident in manuscripts submitted for publication in the journal. The contents of the journal articles do not necessarily imply endorsement of CKA, its officers, Board of Directors, or members. Additional copies of the journal are available at the CKA office, the address of which is listed below.

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**California Kindergarten Association**

The California Kindergarten Association is a nonprofit professional organization dedicated to the improvement of kindergarten education. CKA welcomes educators and others interested in the development and education of young children. To become a member, please fill out the membership form on the back page of the journal.

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# Kindergarten Education: Theory, Research, and Practice

## A Journal of the California Kindergarten Association

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## A Message from the Editor

Welcome to the first issue of *Kindergarten Education: Theory, Research, and Practice*, a journal of the California Kindergarten Association. Look carefully at the logo and see the letters T, R, and P embedded in each other. This logo symbolizes the interrelationship of theory, research, and practice. Each issue of the journal will include articles of theoretical interest, reports of research, and descriptions of exemplary practice. The theoretical and research articles will relate their content to practice, and, vice versa, practice articles will refer to theory and research. Additionally, the research article in this issue details the process of qualitative investigation so as to inform teachers about this form of research.

On behalf of the Editorial Board, I invite our members and others to submit manuscripts for the journal. We look forward to receiving articles that elaborate theory in relation to practice or that examine and discuss theoretical issues of interest to our profession. We wish to advise researchers, including those who have recently completed theses or field research, that this journal is a potential publication site for reports of their research. We urge classroom teachers, principals, and other educators to submit articles describing actual exemplary practices in classrooms for children four through six years of age. The Editorial Board will be pleased to receive articles and to review and assist as needed. Further information about submitting articles is printed on the back inside cover under the heading of Instructions to Authors.

The intent of this publication is to provide a source for the dissemination of knowledge. The journal will reflect the importance of kindergarten education and the professionalism of the educators involved in it.

Violet B. Robinson

# Kindergarten Education: Theory, Research, and Practice

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# Portfolios and Young Children: A Natural Match

ADRIENNE L. HERRELL

Early childhood educators and parents have long recognized the need to use observation to capture growing competence in young children. For many years parents have documented children's growth in the form of Baby Books. These books are the first Early Childhood Portfolios. They consist of photographs and dated notations of benchmarks in the child's life: the first tooth, first word, first steps. They also include other kinds of support materials: a lock of hair from the first haircut, a very small piece of the child's treasured security blanket.

When children enter preschool or kindergarten the teacher often continues this tradition of collecting data documenting the child's growth in the form of art work and samples of beginning writing. Collecting samples is not unusual, although they are not always collected in a systematic fashion. Documenting the child's growth in an ongoing manner is especially appropriate for young children because they are in a period of childhood marked by rapid growth and frequent changes. To fully understand this phenomenon, it is necessary to examine the way in which young children learn.

## HOW YOUNG CHILDREN LEARN

Young children learn by interacting with materials and people in their environment. They construct knowledge by building on past experiences, exploring materials and interacting verbally with people (Piaget, 1951/1962). Their concept knowledge changes as they come into contact with different materials and situations. Play is a major contributor to their growing knowledge base, since it is in play that they manipulate materials and explore their growing understandings through social interaction and physical constructions. As children reenact scenes or reconstruct experiences in play, these experiences become a part of their growing knowledge of the way things work. Children playing with blocks may be constructing a model of a zoo complete with animals they have seen on a recent trip. In observing children's play we can see their understanding of the structure of the zoo itself, the animals separated from the people and from each other. Children are demonstrating use of symbolism as they make signs to identify the animals in the zoo. If the teacher listens as the children talk to their neighbors about their construction, he or she may hear the children using "zoo vocabulary" learned on the field trip. When children are allowed to reenact their experiences in the context of the block center, the information is reinforced.

Because young children's growth and development has been widely studied, there are summaries of the

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stages of development available showing growth proceeding through sequential levels; however, individual children move through the stages at different rates. These summaries of stages of development can therefore be used to document young children's growing competencies in various areas.

Appropriate curriculum for young children is based upon their prior knowledge and interests and gives them opportunities to explore their environment in a continuous cycle of awareness, exploration, inquiry, and utilization (NAEYC, 1991). Thematic curriculum studies are especially appropriate because young children need to make connections in their learning, to link new understandings with existing knowledge, and to learn the language to describe new understandings as well as interact with peers and adults in their world. Young children building a model of the zoo learn about animals and their needs (science). They learn many words and phrases associated with the zoo (language arts). They are beginning to recognize familiar signs like ZOO and to understand some of the functions of written language (reading and writing). They learn that many people work at the zoo (social studies). However, beyond the content learned, they are excited about learning more about zoos and animals. Their disposition to learn is being encouraged (Katz & Chard, 1989).

Because young children are growing and changing rapidly, it is important to observe them in their daily interactions and experiences and document their growing competencies over time, taking periodic samples to show the rate of development. This kind of documentation is said to be dynamic, or ever changing. It is also individual. Each child progresses at his or her own pace. Observation and documentation of this growth helps the teacher to plan appropriate activities for each child. This documentation of growth, when shared with the parents, helps them to understand the many and varied ways in which the child is growing and learning.

A child, for example, who enters a preschool program doing random scribbling may still be scribbling after several months in the program. If the teacher has been saving periodic samples of the child's drawings, these drawings illustrate to the parent that the scribbling has been changing over the period of months, moving from random, to controlled and then to circular scribbling. This dynamic change shows that the child has actually progressed through three distinct stages of scribbling, while to the eye of the parent it all looks the same. Sharing this information with the parent and having samples of the child's drawing to discuss helps the teacher to demonstrate the progress the child is making and helps the parent to understand more about how the child is progressing.

## RECOMMENDATIONS FROM PROFESSIONAL EDUCATION ORGANIZATIONS

Recommendations for assessment of young children have been issued by several professional organizations. Consensus has been reached in several areas:

- Young children should be assessed in an ongoing manner (National Association for the Education of Young Children, NAEYC, 1990; National Asociation of Elementary Principals, NAESP, 1990; National Association of Early Childhood Specialists in State Departments of Education, NAECSSDE, 1990; Administration for Children, Youth, and Families, ACYF, 1990).
- The assessment should be an integral part of the ongoing curriculum (NAEC & NAECSSDE, 1990; NAESP, 1990; ACYF, 1990).
- Assessment should focus on emerging competence rather than on segmented skills (NAEYC & NAECSSDE, 1990).

In addition, the use of these data in curriculum planning has been recognized. Assessment information can contribute greatly to instructional decisions in the classroom. It reflects an accurate picture of the emerging skills and concepts that students are developing, is sensitive to the developmental and personal characteristics of young children, and is based on observations of children engaged in actual classroom curriculum activities (NAEYC & NAECSSDE, 1990; NAESP, 1990; ACYF, 1990).

In order to fully utilize on-going assessment in curriculum planning, the observations and other support materials that are collected must be organized in a way that documents the developmental levels of the child in many areas of growth.

## APPROPRIATE ASSESSMENT IN EARLY CHILDHOOD PROGRAMS

Portfolios are one way of documenting a wide variety of competencies in different forms. Because of this, portfolios allow us to document the students' *repertoires* of understanding (Wiggins, 1989).

The portfolio represents a way of bringing together these varying methods of sampling a child's competencies without using the same format. Anecdotal records of observations in the areas of social-emotional growth, play stages, and language development are collected along with performance samples of the child's emerging competencies in writing, drawing, and reading. Photographs of block constructions and dramatic play scenes are collected along with samples of the child's beginning writing and drawing. Developmental profiles which summarize the stages of development in a number of areas are also included. The portfolio format allows records to be maintained in varying formats, each appropriate to the area of development documented. It also gives the teacher an opportunity to record unique talents and capabilities of individual children.

Developmental Profiles are another way to document a child's growing competencies. A developmental profile is a record kept over time to record the child's growth in a wide range of areas of development. These growing competencies are observed as the child participates in the activities of the school day. Anecdotal records of the child's participation in activities are made and then the child's progress is recorded on a profile sheet which indicates the date of the observation and the stage of development observed. These profiles are kept as a part of a child's individual portfolio.

It is important, no matter which format is chosen, that the observations of the child:

- take place periodically throughout the school year;
- document the child's functioning in activities that are a regular part of the curriculum;
- focus on the individual competencies developing in the child;
- highlight the unique abilities of each child (ex: problem solving skills, negotiation skills, art or music talents).

Because both portfolios and developmental profiles are based on teacher observations, these observations must be made and documented in a way that reflects exactly what the teacher or parent observed.

### GUIDELINES FOR OBSERVING

There are many ways to observe and record behavior. Observation can be categorized into two main approaches, focused and unfocused observation. Unfocused observation is especially helpful for busy teachers since the teacher simply observes and records whatever the child is saying or doing, and then the observation is documented according to the domains of learning demonstrated. In focused observation the teacher decides ahead of time which areas of learning will be documented and looks for opportunities or schedules activities which are likely to produce examples of learning within that domain.

Regardless of whether the observation is unfocused or focused, there are some general guidelines which must be followed.

1. Record only what you see and hear. Valuable observations are based on fact not opinion. In gathering information about the actual performance of the child, only facts will do.
2. Do not interpret as you observe. Interpretations must be based on repeated observations and accumulated information.
3. Use words that describe but do not judge or interpret. Avoid using words such as *because, wanted,* and *liked.* Instead describe the child's facial expression, gestures, and tone of voice.
4. Record the facts in detail and in the order in which they occur. Include the context, time of day, and others involved in the interactions.
5. Record your observations as soon after the fact as possible. Try not to rely on your memory. Accurate and objective observations are usually made very close to the time of observation.
6. Always record the time and date of the observation, and initial it.

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## ELEMENTS OF APPROPRIATE ASSESSMENT PROCEDURES FOR YOUNG CHILDREN

As school districts and individual schools begin to examine their assessment procedures, there are basic elements to consider when making the decisions. Consideration of these elements will help keep the assessment procedures in line with the intent of appropriate assessment for young children.

1. *The assessment procedure should match the goals of developmentally appropriate curriculum for young children.*

Developmentally appropriate curriculum for young children is based upon the children's prior experiences and builds upon their interests. It allows them to construct knowledge by active involvement with materials and people.

An integrated curriculum approach demands an integrated assessment approach. For instance, observing children playing in the block center provides an opportunity for the teacher to document growth in several areas:

- Language development is observed as the children talk about what to build and how to build it.
- Stages of block construction are documented by observing what is built.
- Problem solving skills are observed and documented.
- Social skills are observed and documented.
- Math and science concepts are observed.
- Unique competencies such as negotiation or planning skills are observed.

The information gathered might be in the form of a brief written narrative (anecdotal record) but this same information can be recorded on charts specific to development in the various curricular areas. If stages of development charts are used, then all that has to be noted is the date of the observation. The written narrative is also kept in the records so the teacher can share more specific information with the parent, explaining the context and the content of the observation.

The assessments being described here are "authentic" because they are an integral part of the curriculum. The child is being observed in natural classroom situations, his or her development is observed by the teacher and documented using profile sheets housed in a portfolio or simply as a part of a developmental profile. This information is then used to plan appropriate learning environments as well as to inform the parent of the child's progress.

2. *The assessment procedure should be an integral part of the on-going curriculum.*

The purpose of assessment in early childhood programs is threefold: (1) to help the teacher plan appropriate curriculum, (2) to document the child's growing competencies, and (3) to help parents understand their child's development. The information gathered should help the teacher make decisions about the kinds of activities and materials to provide for the children in the class. In order to provide this information, the teacher has to observe the children as they participate in the curricular activities provided.

If the theme of environmental conservation is being studied, the teacher can observe the children as they make paper in a learning center and can document many aspects of knowledge acquisition and other behavior:

- Does the child understand the concept of recycling, using newspaper that has already been read rather than using new, unused paper to make the new paper?
- Can the child follow a simple sequence of directions?
- How well does the child communicate with the other children and adults involved in the activity?
- Does the child take a leadership role or wait to be told what to do?
- Is the child sensitive to the needs and concerns of others involved in the activity?
- Does the child, when cleaning up, demonstrate an understanding of the concept of conservation, using water sparingly, saving leftover materials for future use, etc.?
- What unique qualities become obvious through this activity? Problem solving, communicating, planning, artistic, or innovation talents might possibly become evident.

By observing and documenting competencies in this classroom activity, the teacher can then make a more informed decision about what activities to plan for the future. The teacher will also know which children need more experience in the activities already provided before moving on.

3. *The assessment procedure should facilitate the gathering of important information regarding a child's development.*

Because time available for observation is limited, time must be spent gathering the kind of information most valuable for (1) planning appropriate curriculum and (2) documenting the child's growing competencies. Therefore, decisions must be made concerning just what kinds of information should be gathered. These decisions will depend to a large degree on the ages of the children being assessed. Preschool and kindergarten children's competencies in play stages, language development, emergent literacy (reading and writing), social and emotional skills will need to be documented regularly. First and second grade children will have additional areas of growing curricular knowledge to be emphasized. The areas highlighted in the records will document the priorities of the individual school curriculum and should be carefully chosen.

A balanced record is important to convey the importance of the various domains of development. In addition, it is vital that unique areas of competence be documented for individual children. By emphasizing the child's individual strengths, the teacher is placing value on them no matter what domain they may represent.

4. *The assessment procedure should allow the teacher to obtain information regarding a child's performance in more than one time frame and in more than one context.*

Young children must be assessed differently from older children. Because young children are changing rapidly and are often greatly affected by the situations in which they find themselves, it becomes especially important to observe them at different times and in different situations. A very young child's language development often looks very different when observed in play as compared with a group show and tell period (Black, 1979). It also might look very different when observed in November as compared with September.

An older child's oral reading is very different when observed during a paired-reading activity as compared to reading orally in front of the entire class. Again, the reading appears very different in May as compared to November.

5. *Parents should be involved in observing and discussing the growth the child is making.*

Conferences based upon children's portfolios or developmental profiles provide a strong message about what curriculum is developmentally appropriate for young children. If the assessment instruments and documentation forms used contain information about important growth gathered over time, this phase of the assessment program will yield important information to be shared with the parents and at the same time emphasize what learning is deemed important in developmentally appropriate curriculum. These conferences will also provide opportunities to learn more about the child's functioning in home situations and the parent's perceptions of the child as a learner. Developmental profiles will help to inform parents as to important growth the child is making and what stages can be expected in the near future. The use of assessments based on observations of the child in classroom situations will help the parent to understand that the educators who are working with the child are carefully observing and adjusting the curriculum to fit the child's needs.

Progress reports designed to carefully document the important aspects of the curriculum, worded so that the parent can understand what is being emphasized in the classroom, must become a part of the assessment procedure. These progress reports are not easy to design but will naturally become a part of appropriate assessment in early childhood programs. Because of the movement toward integrated assessment, giving individual grades in segmented academic areas should be carefully examined. In the primary grades, if reading, writing and other language arts (English and spelling) instruction is integrated, then the report to the parents should reflect this structure. Short narratives that describe the growth the child is making and serve as an invitation to the parent to come to school to view and discuss the portfolio or developmental profile help the parent understand the priorities of the school's program of instruction and provide an opportunity to talk about the child's competence in the home setting.

Documentation of the growth of competencies and learning strategies over time and in varying contexts helps the parent to better understand the child as a dynamic learner. It also helps parents to focus on the child's future education.

## THE CONTINUITY OF AUTHENTIC ASSESSMENT

In order to provide continuity of a child's education from preschool through the primary grades, a form of assessment and documentation adopted in preschool should be able to follow the child throughout the years. The teachers who will work with the child in future years need a view of where the child has been, what strategies are a part of his or her repertoire and what pace he or she has maintained in the past. This information, in order to reflect the child's learning patterns and pace, must be recorded over time, in varying contexts.

By embedding the assessment in the curriculum, the teacher can make informed decisions regarding a child's academic, social, emotional, and physical needs and provide truly appropriate instruction. The teacher looks back over the history of the child's learning and determines how far he or she has come in the past. Instruction that will allow the child to validate himself or herself as a learner in the areas of strength and utilize strength areas to facilitate learning in areas of need is provided. In order to do this, the teacher must become a "kid watcher" (Goodman, 1980). The teacher must know how to recognize and document growth observed in the classroom and on the playground.

If a child is experiencing difficulty in learning, the documentation of observations is valuable to a child study team. The team determines exactly what kinds of situations cause difficulty and which contexts help the child to succeed. It is through the use of these very contextualized records that a group of professional educators and school psychologists can make decisions about "high stakes" placements such as special education. Further testing might be necessary to meet state and federal guidelines for special program placements, but the child's initial identification as a child "possibly in need of further services" is made based upon well documented teacher observations and performance samples. These records serve to provide much needed information regarding the child's learning pace and strategies that are already a part of his repertoire of learnings.

1. Because the teachers in prekindergarten through the primary grades play an active part in the development of assessment procedures, they gain a stronger understanding of the continuity of child development and the need to document prerequisite skills before planning instructional programs. Using the assessment documentation to report progress to parents helps the parents understand the focus of the instruction as well as strengthening their understanding of child growth and development. The continuity of the entire program is strengthened because teachers and school personnel at all levels are involved. The process also helps the teachers and administration to understand and value the work being done at each level as they work together.

### THE ISSUE OF STAFF DEVELOPMENT

The move toward appropriate assessment in early childhood programs will require training for teachers. The teachers must know what to assess, when to assess, and how to document the growth they observe. The benefit to instruction in the classroom will be evident in several ways:

1. Teachers will benefit by learning observational techniques and management strategies in order to truly integrate assessment into the curriculum. The teacher who is carefully observing children and documenting growth observed in the individual child will be better able to provide developmentally appropriate curriculum. The teacher then knows what her children know and are able to do at any given point in time.
2. The teacher who is involved in making choices regarding authentic assessment will feel a sense of ownership of the assessment program and the curriculum.
3. Developmentally appropriate curriculum will become a more meaningful concept to teachers involved in an authentic assessment program. As the teacher learns to document nuances of understanding, he or she will better understand when a child needs more exposure to prerequisite skills before moving on.

It must be recognized that teachers have developmental levels too. Not all preschool or primary teachers have training in assessment methods. Some teachers had child development courses long ago but have not been using the observation strategies they learned because of the reliance on standardized testing prominent in the recent past. Other teachers have been observing carefully over the years and have always maintained anecdotal records and observation journals.

Inservice workshops on appropriate assessment also serve as child development inservice because, in order to document growth, the teachers must learn to recognize the stages of development in various areas. This will be new information for some teachers, review for others. Whether new or experienced in observation and documentation of child development, teachers will benefit from the training and empowerment of documenting the growth the child is experiencing in school and of making decisions to allow the child to develop to his fullest potential.

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# Cognitive Development of Children Four Through Six Years of Age: Implications for the Classroom

VIOLET B. ROBINSON

This article explains what *is* developing cognitively in children four through six years of age, as elaborated by Piaget's later work. The general principles of assimilation, accommodation, and the child's construction of knowledge are elaborated, along with implications for teaching and for the classroom. Young children are in the process of developing functional relations, correspondences, classification, ordering, possibilities, and meanings. Examples of how to foster this development in the classroom are presented. A comprehensive list of specific principles regarding the cognition of children four through six years of age appears in the appendix.

In the discussions over the past few years about developmentally appropriate practice, we have heard many suggestions and recommendations about practice but very little about development. If teachers are to judge appropriateness, they need more than general principles of development, valuable though these may be. They need to understand the specifics of each aspect of children's development not only to make judgments about learning experiences but also to create better ones. The purpose of this article is to present in-depth information about the cognitive development of kindergarten-early primary grade children.

Included in Piaget's later work, which as Davidson (1992) pointed out is not as well known as his earlier work, is the elaboration of what *is* developing cognitively in young children, especially during the "intuitive stage" of the preoperational period. This stage covers the span of about 4 through 6 years of age. The emphasis in this article is on what children at this level are in the process of developing.[1]

Piaget's elaboration of children's cognition provides general and specific principles that can guide teachers in understanding children's cognitive behavior and in planning curricula. Two general Piagetian principles, the principle of assimilation and accommodation and the principle of the child's construction of knowledge, provide a framework for developmentally appropriate education.

## GENERAL PRINCIPLES

*Assimilation* and *accommodation*, which are fundamental processes of cognition, (Piaget, 1970/ 1972, 1976), bear upon learning and, therefore, upon teaching. *Assimilation* is the process of interpreting what we meet in the environment on the basis of our existing cognitive structures. When what we meet does not fit our existing structures, accommodation, which is a change in our existing structures, becomes necessary. The

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following example illustrates a situation in which the child's initial assimilation interfered with achievement of a reading comprehension task. A first grade child, having read a story about a family's picnic, was unable to make a correct inference about the reason for locating the picnic under a tree. The only picnic the child had ever attended was at a beach where there were no trees. Thus, the child's assimilation of the story content to his related conceptual scheme did not provide the necessary information for making the inference. Teaching strategies need to include provisions for evoking assimilation that facilitates achievement of learning tasks and related accommodations.

The principle that the child *constructs* knowledge is a basic premise of Piaget's theory (Piaget & Inhelder, 1959/1969; Piaget, 1970/ 1971), and now this principle is becoming more widely accepted in the field of education. The following example demonstrates genuine construction of knowledge, along with the processes of assimilation and accommodation. Children in a San Francisco kindergarten on the first day of school, finding unit blocks and toy ships for block construction and play, built garages for the ships. When asked by the teacher why they had built garages, they, with an air of assurance and without recognition of any incongruity regarding ships being in the water, responded: "to keep the ships in at night and so they won't get wet when it's raining." Further discussion revealed the children's assimilation of their initial ideas about ships to their knowledge of cars. In effect they reasoned: "Cars have garages; therefore, ships have garages." The teacher tacitly accepted the children's responses, and over the course of several weeks, accommodation occurred as the children acquired information by looking at pictures and books, listening to the content read to them, viewing films, talking with resource people, discussing the content from the various sources, and sometimes arguing about interpretations of the content. Their concepts changed as they gained information, and their garages gradually changed, becoming closer representations of piers and docks and transit sheds. The children applied what they had learned, constructing knowledge as they constructed their harbors and sailed their ships and as they interacted with the content and used it in action.

This example demonstrates children's construction of what Piaget (1970/1971) differentiated as physical knowledge, the knowledge of objects and events derived from simple abstraction from the objects and events as one acts upon them. In this case, the forms of the piers and ships, the roles of workers, etc., were abstracted as the children acted upon the sources of information. Their actions included listening, observing, discussing, experimenting, and reasoning but also kinesthetic actions such as building with blocks and pulling and pushing toy ships, tugboats, barges, etc.

The second kind of knowledge differentiated by Piaget is logical-mathematical. This knowledge is constructed from reflective abstraction, which is abstraction from one's coordination of actions, from the actions, per se, not abstraction from the objects, as in simple abstraction. When, for example, a child forms a correspondence between two items, the correspondence is derived from the actions on the items, not from the items per se. The two kinds of abstraction, however, interact, as Piaget noted in the revision of his abstraction model (Piaget, 1975/1977).

Evaluation periods in which children have the opportunity to look back on what they have done, noting what was accomplished and how it was done, examining problems encountered and solutions engendered, and deciding upon next steps, provide the opportunity for reflection and the construction of knowledge. In order to achieve the best learning advantage for children, however, programs need to provide day-to-day continuity of experiences rather than the experiential structure in what I have termed the "thingy" kindergarten. In such programs children produce a number of things as they engage in a variety of activities, albeit many of them no doubt interesting, but these activities do not continue the next day; the next day it is on to something else. In block construction, for example, children build a structure, which at the end of the period must be taken down so the blocks can be put away; thus, the block construction consists of build, take down, put away; build, take down, put away, with no necessary relationship of content carried forward to succeeding days.

Examples of the San Francisco kindergarten children's construction of logical-mathematical knowledge appear below in the discussion of specific Piagetian principles about children at the intuitive stage of the preoperational period of cognitive development.

## SPECIFIC PRINCIPLES

The appendix to this paper includes a list of specific principles, divided into categories. This list serves as a guideline for the content of this article, but, due to space limitations, the discussion is limited to the following categories: functional relations and correspondences, classification, ordering and seriation, possibilities, and meanings.

### *Functional Relations*

Piaget, Grize, Szeminska, and Bang (1968/1977) characterized the thinking of children at the intuitive level as being a semilogic, a logic of functions, of ordered pairs, in which the movement of thought is unidimensional rather than reversible. This type of thinking is demonstrated in the following task. As a piece of string is pulled over a pulley, the child recognizes that as one part of the string becomes longer, the other part becomes shorter; the child recognizes the covariation or dependency relation. But if the child is asked to compare the length of the first piece of string extended over the pulley with a second piece earlier shown to be equal in length and now extended to a different extension over a pulley, the young child cannot conserve the length; that is, the child does not recognize that the two lengths remain the same even though the extended appearance has been changed.

Functional relationships are central in the intuitive thought of young children. One can observe children spontaneously experimenting with functional relations as they kick or bounce a ball or ride a tricycle: "The harder I kick, the farther it goes. The faster I peddle, the faster I go."

Content and activities in classrooms for young children need to include functional relations. In studying plants, a common topic in science for young children, experiments with growing conditions will enable children to understand that the growth of a plant is a function of water, soil, and light it receives and that the amount of chlorophyll in a plant is also a function of the amount of light . Lever and fulcrum and pulley apparatus invite children to experiment with functional relations, as does the container equipment in the sand box where children repeatedly empty containers of sand into each other, delighting in the discovery that as one container becomes empty the other becomes full and enjoying the rhythm of the act they establish. I observed children from poverty families in the Appalachian Mountains of Virginia, who possessed no toys, spontaneously engaging in this activity using glass jars and pebbles, leaves, and twigs.

### *Correspondences*

As noted in the second principle listed in the appendix, children at this level are in the process of developing correspondences, which Piaget (1979) defined as comparisons that do not create modifications or transformations. Piaget (1941/1965) found that preoperational children at the intuitive level were able to form one-to-one correspondences between sets of items but were not able to conserve the equivalence when one set of items were extended beyond the other. Berthoud-Papandropoulou (1979) found that children at this level were in the process of developing what here are considered to be one-to-several correspondences.

In a study of another type of correspondence, the coordination of pairs, Piaget and his colleagues (Piaget et al., 1968/1977) presented children with two tasks that have received little attention in the United States. The Substitution of Positions task (the train game) required subjects to substitute a train route corresponding in beginning and end points to a blocked route; the Substitution of Flowers Task (the flower game) required subjects to execute substitution exchanges so as to attain the goal, a certain flower. Because, in these two tasks, achievement of the goal requires the subject to make a substitution that corresponds to the direct route to the goal, these tasks here are considered *substitution correspondences.* The designation is in keeping with the original description (Piaget et al., 1968/1977) and with

Piaget's discussion of the relation of functions to correspondences (Piaget, 1975/77, 1979). These tasks are considerably more difficult for young children than the other correspondence tasks, but Piaget and his colleagues point out that all but two four-year-olds could provide one correct response on the train task. Children at the intuitive level could accomplish the flower task by trial-and-error. In a similar task, Davidson (1987) found that 5- and 6-year-old children could solve problems involving functional relations. The years 5 to 7 were transitional years in which children shifted from trial-and-error strategies to anticipatory strategies.

While a sequence of the development of correspondences is not revealed by these studies, it appears that the one-to-one correspondence tasks were readily accomplished by children 4 through 6 years of age. They are able to form some one-to-several correspondences but the highest level of that correspondence appears in children at the end of the period or at the beginning of concrete operations, and a similar development appears in the substitution correspondence tasks.

Correspondences are comparisons that do not involve modification, as when the child puts objects in one-to-one correspondence (Piaget, 1979). Piaget explained that correspondences are transversal, in which states at the same level (horizontal) are compared; transformations, on the other hand, are hierarchical and vertical in organization.

Piaget (1979) also pointed out that "in reality there are correspondences everywhere..." (p. 18). Correspondences certainly are everywhere when children are engaged in block construction, dramatic play, and art, music, and mathematics activities. Children's block constructions demonstrate their construction of one-to-one correspondences as they match blocks of equal dimensions in building structures; one-to-several correspondences and substitution correspondences are evident when they use several smaller blocks to match a larger one. A child arranging plates on a table to match the number of chairs around the table in the playhouse is engaged in one-to-one correspondence. Young children's art work includes one-to-one correspondences as they depict matching arrangements of objects and one-to-several correspondences as they depict several objects connected to one, for example, a figure holding several balloons. In music children form one-to-one correspondences as they sing, matching the sounds they sing to the notes of the accompanying instrument, and as they dance, matching their rhythm and steps to the rhythm and beat of the music. Children form correspondences as they make patterns of different kinds and when they associate numerals with the quantities they represent.

Learning activities designed to develop children's ability to form sound-symbol correspondences in English require children to make comparisons. When, in a phonics activity, children judge that two spoken words begin the same, i.e. with the same sound, they are constructing a one-to-one correspondence. In order to achieve this correspondence, though, they need to be able to distinguish sounds and recognize the beginning of the word as the beginning.

Correspondences of different types are involved in sound-symbol correspondences, and, additionally, forming sound-symbol correspondence requires the coordination of two senses, auditory and visual. One-to-one correspondences exist between certain speech sounds (phonemes) and certain letters or letter combinations (graphemes), as in the phoneme /b/ and the letter *b*. In other cases one-to-several correspondences exist, as in the case of vowels and the consonants *c*, *g*, and *s*, where one grapheme represents more than one speech sound. The grapheme, however, is not the sound; rather it *represents* the sound. In some cases, though, the name of the letter and the sound are the same, as in the long vowels, or the sound is included in the articulation of the letter name, as in *c*. Thus, it appears that the correspondences involved in sound-symbol correspondences are more complex than the Piagetian correspondence tasks. In a preliminary study (Robinson, 1987), I found low to moderate positive correlations between the Piagetian one-to-one correspondence and substitution correspondence tasks and tests of recognition of beginning consonants, sound-letter correspondences, and substitution of initial consonants. Piaget (1979) pointed out that there are various types of correspondences. Although a sequence was indicated earlier, more research needs to be done on the interrelationships of the types of correspondences.

### *Order Relations*

Piaget et al. (1968/1977) emphasized "the primacy of order relations" (p. 192) in young children's thinking, and that primacy certainly can be seen in their art work. Their paintings and drawings are replete with examples of linear order relations, as in a kindergarten child's painting of the sun and flowers all arranged horizontally in a row.

Young children are in the process of developing order relations. At the intuitive level, children easily reproduce a linear order of objects and can convert a circular arrangement into a linear arrangement and vice versa (Piaget & Inhelder, 1948/1967). Piaget (1983/1987) found that children at the intuitive level could change the order of blocks in a series, achieving by trial and error the total possible number of changes (permutations) but not recognizing the logical necessity of that number. Piaget (1983/1987) stated:

> Young subjects notice early on that the number of permutations that can be carried out on an ordered series of objects increases with the number of elements in the series, and this happens long before the developmentally late discovery of the [mathematical law] that determines this number. (p. 130)

Order relations in the form of

linear order appear in classification tasks when children in the first stage of classification form alignments of successive similarities with the task materials. Inhelder and Piaget (1959/1969) noted the "leading role played by linear succession in space and time" and "the limitations of the successive two term comparisons" (p. 24). Young children, even three-year-olds, use linearity as a criterion in judging whether or not graphic forms constitute writing, and their early writing follows the linear form of words (Temple, Nathan, & Burris, 1982).

Although young children cannot perform operational seriation, children in the second stage of seriation can construct a graduated series by trial and error. The San Francisco kindergarten children stood unit blocks on end to create a staircase leading to the air traffic controllers' room at the top of the control tower in one of their block construction airports. The stairs were added when, in an evaluation session, the "builders" were confronted by other children about how workers could get to the room at the top of the tower. In reporting how they accomplished the task in the evaluation session after the staircase was completed, the children were engaging in reflective abstraction.

An interesting problem of order arose when these children were learning about ships and harbors, as they loaded and unloaded their cargo (small square, rectangular, and circular blocks) at the several block harbors in the classroom. After trial-and-error actions, evaluative discussions, and related "experimentation," corrections were applied, and the problem was solved when the children constructed through the series of corrections the principle that cargo to be unloaded first must be loaded last. Here the children constructed reversibility in this order relation.

Children also engage in order relations when making patterns. Patterning is recognized as a developmentally appropriate activity for preoperational children and is widely used today in the teaching of mathematics and art; it also is appearing in reading instruction. Reading authorities who advocate literature-based reading recommend that teachers use stories with repetitive patterns in beginning reading instruction. This recommendation is in keeping with the order dimension of intuitive thinking, as are activities that are concerned with the sequence of ideas in a story, for example, enactments, drawings, and discussions, to name a few.

In their rhythm, patterns and repetitive stories also are consonant with the mental structure of young children. Piaget's (1947/1963) chapter, "Rhythms, Regulations and Groupings" is an elaboration of the growth of the named components, with groupings (operational thought) emerging from regulations (self-corrections), regulations from sensorimotor rhythms (repetitive structures, as in the circular reaction), and sensorimotor rhythms from reflex rhythm. What teachers have long recognized as children's propensity for repetitive songs, chants, stories, and actions reflects an aspect of children's development.

It follows, then, that the exploration of patterns in the teaching of mathematics and the use of repetitive stories in teaching beginning reading are developmentally appropriate for children.

### *States*

In correspondences *states* are compared (Piaget, 1979). Children are in the process of learning about states, and activities that include changes of state facilitate this development. As Piaget (1979) noted: "It is from comparisons of changes of state that the child little by little comes to discover transformations" (p. 20). Children experience changes of state in a number of classroom activities, including art activities such as painting and modeling with clay and food preparation activities such as mixing and baking. Following are a few states about which children learn when preparing food: solid, liquid, gas, whole, part, sliced, diced, crumbled, powdered, frozen, defrosted, dehydrated, dried, raw, cooked.

Food preparation and cooking in the classroom have become popular activities in kindergarten-primary classrooms. The focus of the activity often is on the product, however, rather than on the process, and it is within the process that children construct knowledge. Learning center activities that consist of children independently following a series of directions to get to the product may actually obstruct children's construction of knowledge if the opportunity to examine, reflect upon, and talk about what is happening in the process is not included.

### *Attributes and Classification*

Food preparation activities also afford the opportunity for children to learn about attributes, another aspect of their cognitive development. An apple, for example, has the following attributes: color--red, green yellow; size--big, little, large, small; shape--round; dimension--thick; texture--crisp, crunchy, mealy, juicy, smooth; taste--sweet, tart; fragrance--tangy; sound--crunchy. Historically, teachers in early childhood classrooms have provided many concrete opportunities for children to learn about attributes. These types of activities generate physical knowledge, which, as noted earlier, is derived from simple abstraction from the objects and events.

In addition to experiences that afford the opportunity for simple abstraction of attributes, children also need opportunities to act upon the attributes by comparing and grouping objects. Children at the intuitive level group or classify objects on the basis of similarity (Inhelder & Piaget, 1959/1969). As indicated above, young children classify on a number of bases, including color, shape, size, dimension, function or use, and state, to name a few. As children group on the basis of similarity, they also begin to differentiate between their groupings as they recognize the difference between the groups they form.

Science content, which offers countless opportunities for classification, probably is the most widely used source for classification in classrooms. But other subject areas also afford opportunities for children to judge and classify. Music, for example, may be classified by use (music for resting, listening, marching, dancing), by attribute (fast, slow, soft, loud), and by source (piano, guitar, violin, accordion), to name a few bases of classification.

During this stage of classification, children also exhibit hindsight and the beginning of foresight or anticipation (Inhelder & Piaget, 1959/1969). Evaluation periods in which children reflect upon their activities draw upon hindsight, and planning sessions where children discuss and anticipate what they will be doing foster children's development of foresight. Engaging in science experiments exposes children to anticipation as they predict or hypothesize and to hindsight when they examine the results of their experiments. Anticipation is a "looking ahead" before action, and hindsight is the result of looking back on that action.

### *Possibilities*

To consider possibilities is to look at alternatives before action and doing so contains a measure of looking ahead. In a series of his later experiments, Piaget (1983/1987) studied the development of the generation of *possibilities*. He examined the possibilities that individuals generate in tasks requiring them to make decisions about a course of action in order to achieve a certain result. The tasks included the following among others: finding possible positions for items in certain circumstances, finding possible routes for a toy car, and finding possible ways to construct something. The research investigated the number and kind of possibilities generated.

At the intuitive level, children generate possibilities through "successive analogies" (Piaget, 1983/1987, p. 145), in which a child responds to the problem (A), then sees another similar way to achieve the same result (B), then sees (C) another way similar to B, then sees (D) another way similar to C, and so on. C or D may or may not be similar to A. In pointing out the important relationship between the development of possibilities and the development of operational thought, Piaget stated:

> ...even at [the intuitive stage], the emergence of possibilities bears witness to an accommodating activity, choice behavior, sequential productions of various kinds, regulations, and so on; all these constitute the raw material for the development of the emerging operations. (p. 146)

Piaget (1983/1987) also emphasized the importance of choice in the development of possibilities. In discussing children at the intuitive level, he concluded:

> To explain this early blossoming of possibilities, we can undoubtedly make the following more complex assumption: when subjects become conscious of a choice they make, and which is not imposed on

> them, they come to see the other terms not chosen as possibilities also to be realized....
>
> A choice implies possibilities for the subjects who already know them, but it initiates possibilities for subjects who encounter them for the first time in the course of an activity. (p. 146-147)

Classroom activities that include problem-solving encourage children to make the initial choice to find solutions and then to project possibilities and then to make choices among the alternatives. In the example cited earlier of loading and unloading cargo in block dramatic play, the children generated possibilities and tried a variety of alternatives over the course of several days before finding a solution. Each "experiment" that did not solve the problem led to new possible solutions. The kind of correction that occurred as their solutions did not "work" is what Piaget (1975/1985) called "regulations," a type of self-correction (feedback) that solves the problem or reinforces solutions, as the case may be.

Other activities besides problem-solving can stimulate choice and the generation of possibilities. The painting easel with its containers of paint or the crayon box with its variety of crayons require choice and decision making about the possible colors, possible shapes and their size and placement, and possible connections of both colors and shapes. Block constructions activities stimulate choice and the generation of possibilities regarding the structures to be built and the combinations of blocks to be used. Teachers who encourage children to think of different ways of doing things stimulate the generation of possibilities, and in doing so they help children to develop flexible thinking. In addition they also help children develop meanings.

### *Meanings*

*The Logic of Meanings* (Piaget & Garcia, 1991) is Piaget's last work. In Part I of this book, Piaget reported and discussed his research on meanings and implications; in Part II Garcia discussed the logical and epistemological aspects of this work. Piaget uses the term *meaning implications* to refer to relations between meanings, for example, x implies y. It is not just statements that have meanings, however; actions, too, have meanings, as Piaget (Piaget & Garcia, 1991) explained in the following statement:

> To reach an object implies getting closer to it, and to push it implies continuing this 'going around' movement; whereas to pull back would imply a movement in the opposite direction.... (p. 13-14)

One of the tasks in this research required children to retrieve three toy objects, two of which were enclosed in transparent boxes with open tops. The toys were located on a board at a distance beyond the children's physical reach, but several sticks, a rod with a hook, and a rake were provided as tools to use in retrieving the objects. At the intuitive level, children were able to use the tools as tools to retrieve the objects. In discussing this study, Davidson (1992) elaborated:

> For the 4-year-olds...the objects have detailed meanings. A rod means something that can reach, a hook on the end of a rod means something that can grasp and hold, and so forth. In short, for these subjects, the objects have a meaning of 'tool'.
>
> This illustration indicates the progress that 4-year-olds have made in understanding the meanings of their own actions such as 'reaching', grasping', and 'holding', to the extent that these meanings can now be attributed to external objects such as rods and hooks. (p. 170)

Actions have meanings, and through actions the intuitive child constructs meanings and abstracts meanings. It is important that there be a match between the children's constructions of meanings and the meanings intended by classroom program activities. Therefore the emphases today on meaning in kindergarten-primary curricula are well placed.

### *Summary*

One conclusion that can be drawn from the information presented is that children 4 through 6 years of age are active and busy cognitively. Correspondences, functional relations, and order relations develop during this time, along with understanding of states and attributes. Children begin to classify objects and events on the basis of similarity. Hindsight and foresight are developing. Children this age can generate possibilities, and they abstract meanings, including abstracting meanings from actions. As noted, the information presented supports the current emphases on meaning in kindergarten-primary curricula. Equally important, however, is the also current emphasis on the child's active construction of knowledge. As a child, age 5 years 9 months, said: "We can't know if we haven't done anything" ( Piaget & Garcia, 1991, p. 52.).

## FOOTNOTES

[1] Because this report is based upon Piaget's work, especially his later work, a word about theoretical differences existing today is in order. Some developmental theorists today downplay the notion of stages because research has shown that young children in certain contexts can succeed on tasks that Piaget attributed to a higher cognitive level. In such cases, however, the achievement is tied to the context rather than being general in application. Much of the debate today centers on the question of domain-specific or domain-general cognitive development. In one of his last books, Piaget (1981/1987) differentiated among action patterns, identifying one type as being dependent upon context, and the last book written by Piaget (Piaget & Garcia, 1991) includes a redefinition of the stages. Further discussion of the issue of stages,

however, is beyond the scope of this article.

## APPENDIX

### Principles of Cognitive Development for Consideration in Teaching

### CHILDREN FOUR THROUGH SIX YEARS OF AGE

*Functional Relations and Correspondences*

1. Children this age begin to comprehend functional relations, both dependency and order notions. For example, in pulling a rope over a pulley, the child recognizes that as one section of the rope becomes longer, the other becomes shorter; the length of one is a function of the length of the other (dependency notion); the order is one way.

2. Children this age are in the process of developing correspondences and can establish a one-to-one correspondence between sets of items, recognizing the eqivalency. However, if one of the sets is rearranged, the recognition of equivalency is not maintained; the child does not conserve the equivalence. Conservation of equivalence or number is the first to develop.

3. In the process of developing correspondences, children this age begin to form one-to-several correspondences, i.e., they can establish a correspondence between one item and several other items.

4. The ability to make substitutions begins to develop during this period. For example, the child can recognize an alternate route (a corresponding route) on which a toy train or car can travel when the direct route is closed but often cannot locate a second alternate route.

*Classification*

5. Children this age are in the process of learning about attributes of objects and events.

6. When classifying, children this age can group on the basis of similarity, but they have not yet achieved class inclusion, i.e., the comprehension that a class is included in another class (superordinate or inclusive class--the class of *apples* is included in the class of *fruit*). Grouping in pairs is common with four- and five-year-olds. Some five-year-olds still group on the basis of successive similarities with fluctuating criteria; for example, they will form a row of a red circle, a red square, a yellow square, a yellow triangle, a blue triangle, etc.

7. Grouping on the basis of *function* is common. Example: jump ropes and balls are things to play with.

8. Hierarchical classification begins to develop. Example: carrots and corn are vegetables.

9. However, the child does not

comprehend the class inclusion relation, responding that, in the case of subclasses of 8 carrots and 3 pieces of corn, there are more carrots than vegetables.

10. All-some relations in classification are not clearly differentiated; *some* has an absolute rather than a relative meaning. Example: *some* is 3, 4 , or 5, but 6 is not *some*..

11. Young children cannot classify items using two criteria simultaneously; they will group using one attribute or another but not both.

12. Hindsight and foresight begin to develop in classification, as the child looks back on what he or she has grouped and anticipates the next action of the task.

*States, Identity, and Conservation*

13. Children are in the process of learning about the states of things. Example: the state of a piece of clay as a ball and as an elongated form; the state of food items raw and cooked.

14. Young children focus on states rather than on transformations, i.e., they focus on the initial and final states of an event and do not attend to the intervening factors that created the final state.

    When young children focus on states rather than transformations, they do not conserve quantity. Examples: When a ball of clay has been elongated, they think the quantity is greater in the elongated form. They often will break up crackers or cookies into small pieces, thinking that the broken pieces constitute more than the whole cracker or cookie. As noted in #2, the first conservation to develop is conservation of number.

15. Children understand qualitative identity. Example: when water is poured from one container into another of a different size and shape, the child understands that the water is the same, but the child does not conserve the quantity.

*Ordering and Seriation*

Children this age are in the process of developing order relations. They can reproduce the order of a linear model of similar objects, for example, a string of beads (symmetrical ordering). They are in the process of being able to transpose the order of a circular model to a linear representation, that is, reproducing a linear order from a circular model.

16. When ordering by size objects of graduated sizes (seriation or asymmetrical ordering), children this age can do so by trial and error, but in doing so, they have not yet comprehended that an item is simultaneously bigger than one adjacent item and smaller than another adjacent item.

17. Young children do not grasp the transitive relation in an asymmetrical order, that if A is smaller than B, and B is smaller than C, then A is smaller than C.

*Possibilities*

18. At the intuitive stage, children generate possibilities through "successive analogies", in which a child responds to the problem (A), then sees another similar way to achieve the same result (B), then sees (C) another way similar to B, then sees (D) another way similar to C, and so on. Choice is an important aspect of the generation of possibilities.

*Meanings*

19. The intuitive child, through actions, constructs meanings and abstracts meanings. It is important that there be a match between the children's construction of meanings and the meanings intended by classroom program activities.

*Symbolic Representation*

20. The child engages in symbolic representation through dramatic play, graphic expression, bodily movement, and spontaneous writing.

21. The kindergarten year is a period of rapid language development, especially vocabulary development.

*Relations*

22. Children this age are in the process of developing dimensional relations and relations concerning location and space.

23. Although reciprocal relations are difficult for children to grasp, aspects of these relations begin to develop, as in #25 and #26 below.

24. Right-left relations are developing. The child learns to distinguish his or her own right and left but does not grasp the opposite nature of the right and left of someone facing the child.

25. Young children are in the process of developing understanding of family relations. They can define *brother* as a boy and *sister* as a girl and may recognize that there must be two of more children in a family if one is a brother or sister, but the latter is not fully relational. The child often does not recognize that he or she is a brother or sister to siblings.

26. Temporal relations--order of events in time, duration, age--are difficult for young children. They often relate age to size; something bigger is older.

*Reasoning*

27. In reasoning, young children often juxtapose ideas (juxtaposition). Example: Sun is hot; fog is

cold; rain comes.

28. In reasoning, young children often fuse ideas into an undifferentiated whole (syncretism), which often may be observed during "sharing times" when a child goes on and on and on.

29. In reasoning, young children often reason from one particular instance to another. (transduction) Example: Kindergarten children reasoned that "cars have garages, so ships have garages, too."

*Simultaneity*

30. Young children have difficulty considering two aspects of a situation simultaneously. Examples: They cannot classify objects based on two attributes. They cannot consider two relations simultaneously (longer but thinner, taller but narrower); thus the child cannot conserve quantity. Therefore in planning lessons simultaneity should be avoided. The two aspects can be presented sequentially rather than simultaneously.

*Conceptions of Reality and Causality*

31. Young children often do not distinguish between that which is psychological and that which is physical. Example: dreams are real in the sense of being "out there" in reality.

32. Young children often attribute life and consciousness to inanimate objects (animism). Example: The clock knows it tells time.

33. Young children often consider that natural phenomena were produced by humans or by other objects (artificialism). Example: It becomes night because we sleep. Clouds move because there is wind inside of them and the wind pushes the clouds making them move.

*General Characteristics of Development and Learning*

34. Assimilation and accommodation are fundamental processes in the development of cognition. In assimilation, the child (and adult) interprets that which is encountered in terms of existing cognitive structures and in relation to his or her past experience. In accommodation , the child undergoes a change in cognitive structure or develops a new one. Peer group interaction is a means through which accommodation occurs.

35. Physical knowledge results from children's actions on things and interaction with events. The attributes are in the things or events. Example: A child learns that an object is heavy or light by moving it; the weight is an attribute of the object.

36. Logical-mathematical knowledge results from reflective abstraction, which is abstraction from one's actions, a realization of

something happening because of one's actions. Example: the recognition that no matter how one arranges a set of objects, the sum remains the same (the commutative principle).

37. The child *constructs* knowledge through action, interaction, and reflection.

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# Choice Behavior in Kindergarten: A Qualitative Study

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This qualitative study investigated children's choices in two kinds of classrooms, one defined by its teacher as "more academic" and the other defined by its teacher as "more developmentally appropriate." Data were gathered from observations as a participant-observer, interviews, and content analyses of student-produced books. The data analysis resulted in 10 descriptive statements. Although the class schedules affected both the extent and type of choice making, children in both classes had opportunities to make choices. The developmentally appropriate classroom, however, presented more opportunities for choice making and a more diverse set of activities. The findings about children's reported desire to build or make physical objects suggest that many kindergartners are especially motivated to construct actively and that their motivation may represent a developmental characteristic. The data also revealed that some children did not choose an activity they liked because of extraneous factors such as the cleaning-up task; thus there are both positive and negative aspects of kindergarten choice. Therefore teachers, teacher-researchers, and other researchers should examine choice and its optimal use in the classroom.

## INTRODUCTION

The possibility of children making choices during the school day elicits different reactions from people involved in education. Proponents suggest that children's choice making may enhance responsibility, initiative and cognitive development. Skeptics worry that children are not ready or capable of making good choices at school and should be told what to do by a trained teacher. Both advocates and skeptics base their views more on opinion and conjecture than they do on empirically derived data on the topic. Choice is a potentially important issue across the entire educational span and yet there is inadequate knowledge of choice at all grade levels. Choice is relevant, however, in kindergarten where numerous recent educational policy recommendations suggest that children should make curricular decisions as part of the classroom experience.

The list of individuals and organizations suggesting that choice be incorporated in kindergarten is long and impressive. The National Association for the Education of Young Children believes children should be actively involved in classroom decision making, as reflected in the association's position statement on developmentally appropriate practice in early childhood programs for children up through age eight (Bredekamp, 1987). The California State Department of Education (1988), in the document *Here They Come: Ready or Not!*, argues that

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children should make choices from the materials and environment provided by an early childhood educator. The High/Scope Educational Research Foundation is well known in early childhood settings for incorporating children's choice behavior in the "plan, do and review" component of the cognitively oriented curriculum. Mainwaring (1975), a head teacher at the High/ Scope Staff Training and Curriculum Development Center, wrote:

> Environments in which every event and activity is structured by someone other than the child provide few opportunities for accommodative and assimilative learning. There is little chance for children to choose the objects they will work with, the events they will participate in, and most importantly, the goals and end products they will work toward. Much of what is taught is therefore never learned, and what is "learned" is often quickly forgotten. (page not numbered)

Theory on various aspects of human development is a fruitful source for information and implications about the importance of children's choice behavior. Piaget's theory (1929/1951) is well known for derived implications that young children learn best through activity and direct manipulation of the environment. However, this popular idea is not necessarily supportive of choice in kindergarten. A classroom teacher could divide the children into five groups and then by his or her direction rotate the children through cooking, blocks, dress up, wood working and water play areas. Thus, the activity may be developmentally appropriate, but choice is not necessarily a component.

Much previous research on choice has drawn upon Piaget's concepts of assimilation and accommodation. However, an additional perspective arises from other principles of Piaget's theory. The importance of choice is implied throughout his writing when he discussed the importance of the child's spontaneous discoveries. Responding to an interview question about teaching, Piaget (Evans, 1973, p. 53) stated: "You need a mixture of direction and freedom." Piaget's (1981/1987) latest research on generating possibilities revealed the importance of children's choice in this aspect of cognitive development.

Choice also is important for emotional development. In a recent article, Wieder and Greenspan (1993) presented an educational model that is based on a concept of early learning through relationships and emotional understanding. The main thesis is that emotional development is dependent on healthy interpersonal relationships which create the basis for subsequent cognitive development. Wieder and Greenspan recommended certain curricular practices that capture the emotional and interpersonal aspects of learning. One of these recommended practices is the provision of an environment that offers exploration and choice where group interaction, sharing and symbolic play are encouraged. Teachers should not cover shelves or keep toys behind doors because these do not help children learn to choose and focus in the face of competing distractions. A child's choices, according to Wieder and Greenspan, indicate his or her motivation that is an essential element for more advanced learning, such as complex sequence building evolving out of more primitive efforts. The authors also suggested that choice and activity time should be long enough to allow children to wander around for a while or to move from one activity to another before finally settling down. Thus, according to Wieder and Greenspan, choices contribute to a motivational state that is supportive of more advanced forms of cognitive development — if the child "just isn't there", then learning is less likely to occur.

Educational research efforts have been dominated by analyses of choice in special education settings across a variety of age groups, but with an underrepresentation of kindergarten children (e.g., see Gothelf, Crimmins, Mercer, and Finocchiaro, 1994). There is little educational research on choice conducted in non-special education settings or with kindergarten children.

One helpful social psychological perspective on choice comes from Shafir, Simonson and Tversky (1993) who provide a wealth of information on what they call "reason-based choice." Shafir et al. (1993) indicated that people tend to make choices for three different reasons: from affective judgements, from standard operating procedures (habits), or from a careful evaluation of options. They also argued that decision making is filled with uncertainty and conflict for the chooser and that two different research approaches have been offered to explain how people resolve such conflict and uncertainty. The formal modeling approach to decision making places a numerical value on each choice option, and people are believed to act in a way that maximizes value. Thus, choice is defined as the maximization of value to the chooser. Shafir et al. (1993) prefer the second approach, reason-based analyses of choice behavior, and look at varying choice circumstances, such as choosing between equally attractive options and choosing under conflict situations. Thus, this second approach to the study of choice stresses the balance of reasons for and/or against the various alternatives. According to Shafir et al. (1993), reason-based analyses are easier than the value maximization approach to apply to complex, real world decision making as would be found in a kindergarten classroom.

The research of Shafir et al. points to the appropriateness of a study that focuses on children's choice behavior in real world settings and probes for their thoughts about the choices they made. The present study was conducted in response to this need.

## METHOD AND PROCEDURES

Data were gathered from February through May at a public elementary school in the suburban Sacramento, California area. The school consisted of 11 different kindergarten classrooms on the same site. Students were primarily of middle socioeconomic status (SES), the great majority of whom were Anglo. Initial contact was made with the principal who agreed to a meeting to discuss the proposed study. He was very cooperative and agreed to talk with the teachers about their possible participation. He also expressed some concern about how the data would be used. Apparently, there had been disagreement within the faculty about what is appropriate practice in kindergarten, and some teachers had had rather strong arguments over the issue. The principal was assured that the focus of the study was on choice behavior and not on the superiority of one curricular approach over the other(s). He arranged a day for the researcher to meet all the teachers on an individual basis in their classrooms, which occurred in late January. The researcher explained the proposed study, toured each classroom, and answered questions. Notes were written after leaving each classroom.

It was from these initial individual meetings that two classrooms were selected for study. One teacher had described herself as "more developmentally appropriate," whereas another described herself as "more academic." Having these two teachers participate would produce descriptions of choice in two different types of kindergarten classroom. Both teachers accepted the offer to participate, and a mutually agreeable schedule was arranged. As it happened, one of the classrooms was a morning kindergarten and the other met in the afternoon. Both teachers were highly committed, hard working, and fully credentialed professionals with appreciable experience. The morning children called their teacher by her family name, while the afternoon children called their teacher by her first name.

The morning kindergarten of approximately 30 children was the one described by the teacher as "more academic." This appeared to be an accurate descriptor for the classroom on Tuesdays, Wednesdays and Thursdays. On these three days the children were organized into equal size groups and rotated from reading readiness, math, and science or social studies instructional groups. However, Mondays and Fridays were more likely to include free choice time and "non-academic" activities. Morning kindergarten students spent some time in whole group, small group and individual student activities in their room that was built for a kindergarten and was part of the main quad of classrooms.

The afternoon "more developmentally appropriate" kindergarten followed the same schedule all 5 days for its 30 students who were in a portable classroom. The children "wrote" in their journals to start the day, had a whole group opening and planning session, worked in centers for 1 hour, had clean up and recess, and concluded the day with an alternating schedule of half the children attending the school-wide physical education pull out program in the multi-purpose room, while the other half stayed in the classroom for more directed group instructional activities. The two groups then switched. The morning kindergarten class also participated in the school-wide physical education (PE) program.

Both classrooms benefitted from the participation of a part-time aide, parent volunteers, upper-grade students, and high school students. The school-wide PE program was staffed by specially trained PE "specialists" who were provided by the district. The researcher heard several teachers and parents say on numerous occasions that they felt lucky to be at this school because of the resources, children, families, and other professionals. The researcher was approached on many occasions in both classrooms by children who wanted a hug or just wanted to talk. The only controversial issue that continued to come up was the previously mentioned disagreement within the faculty over how a developmentally appropriate program should be implemented. This issue seemed to underlie a marked degree of controversy in the faculty, and it appeared groups had been formed over the issue.

The researcher was introduced in both classrooms as "a special friend who would be visiting a lot." Data were gathered using participant observation, content analyses of child produced books, record keeping on how long children stayed at the same activity, and a semi-structured interview/procedure that asked the children to give reasons for choosing one center and not choosing another. On approximately one-half of the observation days, the researcher worked at one of the classroom activities such as art table, math table, journal writing, and the water/bubble table. On these days the researcher functioned as a member of the teaching team, interacting freely with the children. Field notes were recorded after completing the interaction and leaving the school, usually in the researcher's car.

On the other half of observation days, the researcher circulated or sat in an unobtrusive location concentrating on children's choice behavior that was recorded by means of anecdotal observation techniques. Whenever an example of a child making a choice was observed, it was immediately recorded. These field notes include descriptive details on the people, objects, events, and discussions that related to choice behavior. Several "observer's comments" were also recorded in the margins as potential organizational thoughts and ideas occurred to the researcher.

Some children were confused over whether on a particular day the researcher was a teacher working at a center or a non-teacher who left them alone and wrote down things he saw. However, the confusion was limited to a few instances and were resolved. Both teachers exhibited subtle signs (glances) of being aware they were being observed by a university professor who was present in their room on different days over a 4-month period. The children seemed to adapt quickly to the researcher's presence. In general, the researcher was accepted, became part of the setting, and was not very obtrusive by his presence.

Content analyses were completed of two books that were produced by children in the morning class. These children start in September to write with adult assistance (some scribble, some dictate, some color, and some write) stories or responses to certain questions posed by the teacher. The children's responses were collected in a book that was kept in the classroom. Although the children made several of these books, only two that were produced later in the school year were analyzed. These were "What do you like best about school?" and "What I like best about kindergarten." The decision to conduct the content analyses was made during participant observation when the researcher came across the books and decided they might shed light on some aspect of choice.

It was also decided during the course of participant observation that it would be interesting to generate data on how long children stayed at a center. Anecdotally it seemed that some children stayed at the same activity for longer periods of time than did others. In the morning classroom the children were observed in 10-minute segments, and the particular center where they were working was recorded. In the morning class free choice time lasted 30 minutes on Monday and Friday, so three recordings were made. In the afternoon class the children were also observed in 10-minute segments, but during a 60-minute choice time. In both classes the researcher had an alphabetical list of all children and simply went from one to another recording the particular activity.

The final source of data was developed after many frustrating failures at spontaneous interviewing of children to identify their reasons for selecting a particular activity. On many, many occasions during the course of participant observation, the researcher saw a child make a choice and followed this observation with a question about why the child had picked this activity. The reasons given by the children were almost always the same and were not very informative: "It is fun" or "I like it" being the two most frequent responses. No probe or follow-up question proved successful at getting beyond these two unrevealing responses. Then a semi-structured interview/procedure, based on the procedure called "thinking games," was introduced. (The author is indebted to Dr. Carmen Saco-Pollitt for this suggestion.) This procedure utilized small plastic toy objects in the shapes of humans that were placed into a pretend classroom setting. The pretend classroom had four activity areas that the child could choose to do in order of preference by moving the toy representation of him or her to that area. A record of each child's actual classroom choices had been kept and was used to select the four choices presented in the procedure. Two choices were those the child had actually previously made and two choices were those never selected by the child in the actual classroom. It was important that the procedure build from the children's experience (in terms of actual previous choices in the classroom), that the children had an object they could see and physically manipulate, that it had some common features so that children's responses could be compared, and that the response mode would not rely too much on verbal skills to formulate answers.

In May the researcher took each child one at a time to a table in the back of each classroom. The procedures were explained, and the child was asked to move the toy object and pick the first, second, third and fourth activity he or she would choose in the pretend classroom and why. Although some children once again said "It is fun" and "I like it", the frequency of these responses was greatly reduced and more informative data emerged.

Data from the field notes were analyzed by first reading through them in their entirety, leaving them alone for approximately one month and then reading them once again. Preliminary categories were developed and then revised to more closely fit the recordings. Color felt pens were used to code the photocopied field notes in accordance with the categories. Some individual observational items could be categorized in more than one way. For instance, some observations were color coded in the category of "times when there was little choice" and also in the category "unexpected or miscellaneous choice." Content analyses of student-produced books and the children's reasons for selecting activities (from the semi-structured interview/procedure) also required that categories be developed, revised, and used to sort individual responses.

## RESULTS

Data analysis resulted in 10 statements that describe what was learned about children's choice behavior in kindergarten. These 10 statements are the author's qualitative assessment of choice as experienced and explained by the children. An objective that underlies this section is to provide the reader with both data on, and a feel for, choice in all of its complexity. There were some ways that the morning and afternoon classes were similar and other ways that they differed. This is not too surprising given they are both in the same district, at the same school, and yet are taught by two teachers who describe their curricular orientation in very different ways. A majority of the results consists of the most commonly occurring events recorded by means of the various data-gathering procedures. However, some of the statements represent low frequency events that were nonetheless interesting. One example of this is the statement about the few children who appeared to have difficulty making a choice. There were not many of these children, and yet they are believed to be an important part of choice in the classroom.

### *Descriptive Statement #1*

**Children choose what activity or center to go to as part of the regular weekly schedule in both classrooms.** Both kindergarten teachers had weekly scheduled time for children to make choices in terms of activity or center. One teacher (a.m.) tended to have free choice time on Mondays, Fridays, and at other times during the week as she deemed appropriate. Her choice times usually lasted about 30 minutes. The other teacher (p.m.) scheduled 60-minute free choice times for every day of the week. Both teachers occasionally made exceptions to their regular schedule due to special events like the jog-a-thon, field trips or a party.

There were some limitations placed on the children as they made their choices, most commonly the limitation on how many children could be at an activity at one time. Both teachers also gave first choice to children who had not yet had a chance to go to a center for the first time or more recently. Both teachers also enforced appropriate behavior at the centers and occasionally removed a child from an activity for behavior problems of various sorts. Neither teacher was observed to systematically encourage the children to go to one center instead of another (with the exception noted above). Children were generally free to leave one activity if they wanted to go to another center.

Following is a list of the choices available in the morning kindergarten on one day in April: Legos®, dominos, small blocks, big blocks, an art activity, paint easel, play house, and write or trace on the chalk board. The afternoon class had these choices on the same day: big blocks, small blocks, water/bubble table, puzzles, finger paint, paint easel, and make maracas, look at Waldo books, play the piano, make a piñata, color and do "melt" art (melt crayons to create a design). Analysis of these representative choices suggests that the afternoon class had more diversity in terms of materials and more possible choices.

Occasionally there were choices of what to do even after the teacher had told children they must go to a certain activity. For instance, in the morning class, groups of children were required to go on a rotating basis to the math table. Once at the math table, however, they could select from three math-related options to include tracing or writing numbers on small chalk boards, practicing writing or tracing numbers on the classroom larger chalk board, or working with math rods.

Both teachers kept some of the same choices for the 4 months of the study (blocks and paint easel) but also introduced new activities each week. Thus, children were free to choose from either activities that had been around for a while or were rather novel. It appeared that the children were at different times equally attracted to both the old and the new.

### *Descriptive Statement #2*

**Children made choices of how to participate in an activity.** An important aspect of children's behavior were the many opportunities they had to determine how they would take part in an activity. Sometimes the children had chosen on their own to go to a center. Once there, they had great latitude in terms of avenues to pursue. For instance, once the children chose on their own to play with the big blocks, they could decide what object to build, the story/fantasy that would involve the constructed object, and who would play what role(s). Specific additional examples of activities the children had initially chosen and then structured primarily on their own were melt art, water/bubble table, clay table, Legos®, dominos, playhouse, paint easel, small blocks, bleach and tissue paper art, and spin art.

At other times the children had been told by the teacher they must go to an activity, and yet once there the opportunity for choice was obvious. As an example, children in the morning class were required to work on a page called "Mr. Dictionary Page" that followed whole group instruction on the letter x. The teacher had previously cut out from magazines and old workbooks numerous photographs of words containing the letter x. For instance, there were several different photographs of photocopy machines and Trix cereal. Children had at least two choices during this required task. First, they could choose which cut out photographs from the box they would use, and, second, they could choose to illustrate the page as they wished. There were numerous other instances where children had not selected the activity but still could exercise choice regarding it. These instances included: 1) journal writing (they choose how to record their thoughts, e.g., scribble, color, give dictation, write, and they choose the topic, what to say about it, and how to illustrate their writing); 2) sticker art; 3) constructing a thank-you note for a field trip to the post office; and 4) a poster advertising a community event. The children were also required to participate in whole group class meetings for sharing, but could decide if they wanted to share and if so what object.

This "how to do it" aspect of choice became apparent to the researcher only after hours of participation were completed. Before this observation, choice was conceptualized more in terms of the choice of what to do. These details add to a more accurate complex image of choice as it actually occurs in the classroom.

### *Descriptive Statement #3*

**Children also made unexpected choices not described in Statements 1 and 2.** A surprising finding had to do with the many choices children made that came at unexpected times (at least to the researcher) and in a variety of settings. This aspect of choice became apparent the first day of observation when children in the morning class choose any seat they wanted to complete an assignment worksheet. Some of the children were looking for a friend and once finding that person sat nearby. Children in the afternoon class were free to sit on the rug where and with whom they wanted. These two observations were just the start of choices the children made that did not consist of the overall activity they were doing or how they did the activity. Following is a listing of some of the, more common examples.

- Children went to the restroom when they wanted, not only at recess.

- The "student of the week" chooses other children in the group to be excused to work tables for a project.
- Three children left one table where they had been working and went to a different table to finish.
- Children chose two songs to sing together during group time on the rug.
- Children chose how to tell the teacher if they were going to buy lunch in the cafeteria (some said "yes", others nodded, two stood up and said "you got it").
- Children sometimes chose snack items provided by the teacher or parents at the start of recess.
- Children sometimes told the teacher what "big book" they wanted her to read to them.

The children saw three men working on the classroom gutters. They chose to go to the windows and watch the men and eventually went outside on the classroom porch to watch. This happened without teacher direction, although the teacher was carefully monitoring the situation and told the children not to go off the porch.

These examples point to the presence of choice in classroom circumstances where teachers and researchers alike may not expect to find it.

*Descriptive Statement #4*

**Teachers sometimes use choice as a "sponge" or "filler" technique.** Most teachers are familiar with three related classroom happenings. Some individual children complete their projects much sooner than others. Or, an entire class takes less time than the teacher had anticipated. And sometimes another member of the teaching team who was scheduled to conduct an activity fails to show and the regular teacher must decide what to do as parent volunteers look on from the back of the class. Teachers need "filler" or "sponge" activities in these circumstances. Results of this study indicate that both the morning and afternoon teachers sometimes addressed these concerns by giving the children choices.

An anecdote of choice as a filler came one day when the art docent was scheduled to come into the class and conduct a half hour art lesson. When she did not come, the morning teacher asked the children to go to the rug and choose what songs they would like to sing. This led to, among other selections, "Rudolph The Red-Nosed Reindeer" being sung in April. On a different day several children had completed their required project of drawing a picture for a birthday book that would be given to a favorite cafeteria worker. The early finishers were told to choose from Legos®, blocks, house area, and science activities until the other children had finished the activity. Choice as a filler was also illustrated by some children being given three choices (read a book, Legos®, draw a picture) after they had finished coloring a worksheet map of Mexico, and by other children being told to choose and look at a book as clean up time started winding down but everyone had not yet cleaned up a respective area.

*Descriptive Statement #5*

**Children made many choices outside the classroom during recess.** Not surprisingly, children in both classes made choices when they were outdoors at recess. These choices included what to do, how to do it, for how long, and with whom. There were limits placed on the children's choices at recess that were primarily related to the children's behavior. For instance, if a child misbehaved at the swings, then he or she was sometimes required by the teacher to leave that activity. Choices were also limited by factors such as the number of tricycles, number of jump ropes and, in a few cases, by some children telling others that they couldn't play with them or in the same area/activity. A few times children were denied a choice because of their gender, as illustrated when three boys told a girl she could not play on the wooden climbing structure because it was their "Ninja headquarters", and on another occasion when two girls told two other girls they could not play at an activity because "we hate you."

A record was kept on two different days of the play activities selected by children during recess. Girls were most commonly doing "turn arounds" on the metal bars, while the most common activity for the boys was to form into one or two groups and play "Teenage Mutant Ninja Turtles." The sand box, jump ropes, wagons, tricycles, and plastic stilts were other common selections. Children's favorable evaluations of recess activities are presented in Descriptive Statement #8 about content analyses of children's self-produced books.

*Descriptive Statement #6*

**There were times during the school day that children's choice behavior was significantly limited.** Large or whole group activities were associated with less choice by the children. Both the morning and afternoon teachers organized part of the school day for direct instruction or discussions that involved all of the children doing the same thing at the same time. Opening sessions, story time, music, sharing, discussion or evaluation of what happened at choice time, instruction on specific academic topics (letters, numbers, science) all tended to take place under such circumstances. The morning kindergarten teacher also divided the children into three groups of approximately 10 children each who were rotated through more academically oriented groups (math, science, social studies, pre-reading) on most Tuesdays, Wednesdays and Thursdays. Although there were times the children made choices in whole group settings (whether to share, what to share, what book to have read to them) and there were also examples of choice in the three groups of 10 (how to complete the worksheet, how to design a poster, where to sit), the total amount of choice was nonetheless much less at these times.

The school-wide physical education program was the best example of a large group activity that provided few choices. All kindergartners participated in the program that was taught by physical education experts who had been specially trained and were very interested in physical education. Each of the 11 kindergarten classes sent half of its children to the school multi-purpose room while the other half remained in the regular classroom. The groups switched after 30 minutes. At any one time there would be two or three classroom halves mixed together at the same time for PE with up to 45 children involved. Some instruction took place inside the multi-purpose room and some happened outside, weather permitting.

One example of the content of the PE program came from a day in May. Three children out of the total 45 had been selected to go inside of a circle that was formed by the other children holding hands and forming a circle shape of approximately 15 to 20 yards across. The children were instructed to roll the ball and try to hit one of the three children inside the circle. They were not allowed to throw the ball. The children seemed to have only one choice at this time and that was with whom they would stand while on the outside of the circle.

On a different day the children were instructed to take part in one of three simultaneous activities. Some children were told to play dodge ball, some to throw balls through hula hoops, and the other children were told to play bean bag chase tag. Once again, the only apparent choice was where to stand in line or in the circle.

*Descriptive Statement #7*

**Children in the afternoon kindergarten moved more from one activity to another than children in the morning class.** One possible problem inherent in children's choice behavior is the possibility that some or even many children will keep making the same choice and deny themselves a breadth of experience. Data from this study suggest that children in the morning class made fewer choices during activity time. However, the reasons for and consequences of this difference are not known. Time sampling was used in both classes, using 10-minute periods that resulted in recordings of each child's activity every 10 minutes. Because the morning class choice time lasted 30 minutes, three different recordings were made, whereas each child was observed six different times in the afternoon class. In the morning (shorter) free choice time the results were as follows in Table 1. The afternoon class (60-minute period) changed more, as represented in Table 2.

Precise comparisons are impossible between these two sets of findings. However, in an effort to probe into the findings the recording for the afternoon class for the first 30 minutes were tallied in Table 3.

As can be seen, analysis of results from both classes first 30 minutes of choice time points to the same finding that children in the afternoon class made more choices with fewer p.m. children going to only one activity. Possible causes for and consequences of this difference are considered later in the Discussion section.

*Table 1*
**Free Choice Time Results for Morning Class**

| Number of Centers Visited | Number of Children |
|---|---|
| Went to 1 center during choice time | 16 children |
| Went to 2 centers during choice time | 11 children |
| Went to 3, 4, or 5 centers during choice time | 0 children |

*Table 2*
**Free Choice Time Results for Afternoon Class**

| Number of Centers Visited | Number of Children |
|---|---|
| Went to 1 center during choice time | 0 children |
| Went to 2 centers during choice time | 4 children |
| Went to 3 centers during choice time | 8 children |
| Went to 4 centers during choice time | 10 children |
| Went to 5 centers during choice time | 4 children |

*Table 3*
**Free Choice Time Results for Afternoon Class for First 30 Minutes Only**

| Number of Centers Visited | Number of Children |
|---|---|
| Went to 1 center during the first 30 minutes | 5 children |
| Went to 2 centers during the first 30 minutes | 19 children |
| Went to 3 centers during the first 30 minutes | 3 children |
| Went to 4 centers during the first 30 minutes | 0 children |

*Descriptive Statement #8*

**Children's self-produced books revealed additional information about what they like at school.** Two content analyses were conducted of children's self-produced books from the morning class. One of the books contained answers to the question: "What do you like best in kindergarten?" and the other related to the question "What do you like about school?" There were several other child-produced books that were not analyzed.

Table 4 lists by frequency the most common children's statements about what they like in kindergarten (some children provided more than one statement).

Children responded to the question about what they like about school as presented in Table 5 (some children identified more than one thing they liked).

*Table 4*
**Most Common Children's Statements About What They Liked in Kindergaren by Frequency**

| What They Liked About Kindergarten | Frequency of Statement |
|---|---|
| Recess | 16 |
| Playing (especially at the post office center) | 13 |
| Eating in the cafeteria | 2 |
| Numerous other answers with one example each, such as the science table, quiet free play, and reading books with a friend | 1 ea. |

*Table 5*
**Most Common Children's Statements About What They Like About School by Frequency (With Some Children Identifying More Than One Item)**

| What They Like About School | Frequency of Statement |
|---|---|
| Outside, recess | 11 |
| Other children (7 made a general reference to other children, whereas 4 made a reference to a specific child) | 11 |
| My teacher | 9 |
| Legos® | 8 |
| Games other than Legos® (toys) | 7 |
| Big blocks | 4 |
| Look at books | 4 |
| There were several additional answers with 3 or fewer responses, such as riding the bus, eating lunch, the playhouse, working and doing art | ≤ 3 |

*Descriptive Statement #9*

**There was a great deal of diversity in the children's explanation for either choosing or not choosing an activity. In both classes the most common reason children gave for choosing an activity was the opportunity to make or build something. Children in the two classes offered different reasons for not selecting an activity.** As described in the Methods section, children were asked in a semi-structured interview/procedure to make choices and then explain why they had made those choices. Sixteen children in the morning class and 8 from the afternoon session said they liked a variety of activities (blocks, Legos®, dominos) because they wanted to build or make something out of them. Some children specified the object they wanted to make (fort, automobile), while others made reference to a physical characteristic of the built object (its height or the noise it makes when it is "wrecked").

Children in the morning class disagreed among themselves about the painting easel. Five children selected the easel first and explained their decision in terms of the freedom to paint whatever they want or by the opportunity to create a "pretty" product. Five other children specifically mentioned their lack of interest in the painting easel, most commonly related to the belief that "all you can do there is paint." Apparently, these children wanted an activity that allowed for more diverse use. Only one child (a girl) in the morning class mentioned a reason for choosing the playhouse (you get to pretend there), whereas four boys said they would not choose that activity because "girls are there."

The choice explanations of children in the afternoon class made many references to make a choice that led to some sort of physical experience that researchers believe would contribute to physical knowledge. Eight children explained their interest in eating/tasting popcorn, popping bubbles, melting crayons, and putting a hand in wet paint. Four children reported choosing an activity because of being skilled at it. The most common reasons for not choosing an activity in the afternoon class were: (1) how long it took to clean up--5 responses (e.g., building with big blocks), (2) how long it took to do--5 responses (e.g., making paper mache objects over several days), and (3) how messy it was--4 responses (e.g., finger painting).

In summary, both classes' most common reason for making a choice had to do with building or making a physical object, but the two classes differed after that in their reasons for preferred choices. The two classes also presented a different profile of reasons for not making choices, and there was a great deal of diversity in the overall responses.

*Descriptive Statement #10*

**In both classes there was one child who either took a long time to make choices or on some days did not make a choice at all.** Two children were observed to exhibit behaviors suggesting some significant struggle with the act of making choices. This was noted both during participant observation and during the time sampling procedure designed to see how long children stay at one center before switching to another. For instance, one girl in the morning class was mentioned in field notes as "standing around", "acting like an on-looker", and during the 30-minute free choice period was recorded as "undecided" all three times despite the efforts of her teacher and a parent to get her involved in the classroom activities. However, this same child functioned quite well in the more structured activities where she was told what to do. In these circumstances field notes indicate she "gets right with it and quickly finishes her task."

Many children in both classes were observed as being "undecided" at choice time, and sometimes they were waiting in line for an activity to become available. The two children mentioned in this descriptive finding went far beyond an occasional thoughtful or inactive stance so that a majority of their time during free choice periods was spent outside the benefit of planned activities.

## DISCUSSION

Data from this study document that choice was present in both classrooms. Anxiety that kindergarten children are incapable of making choices seems to be unfounded. With only a few exceptions, the children took advantage of opportunities to choose and were functioning quite successfully. The choices available to children proved to be quite complex, allowing at different times choice of what to do and how to do it, choice of inside and outside the classroom, and choice at unexpected times, along with participation in choice that was serving as a filler activity. There were also times when the children's choice was curtailed, such as in whole group activities. Most children demonstrated an ability to function in both high and low choice settings. During the course of the study, children were not observed to develop behaviors at choice time that caused them problems at more structured parts of the day. For instance, most children freely moved around the room during choice time and yet stayed more or less in one place during group meetings on the rug and at PE activities. Most children differentiated what was appropriate in different circumstances and acted accordingly.

Children in the morning and afternoon classes showed different patterns of either staying at a center for an extended period of time or making several changes from activity to activity. In general, morning students made fewer changes and thus stayed longer at one activity. It is unclear what can explain this finding or what consequence, if any, it suggests. "Is it better to make fewer or more choices?" seems to be the basic question. Is there an optimal number for different children? Does this change from day to day?

An argument could be made that children in the morning class were having a better experience because they tended to spend more time on tasks to possibly produce better products or more complete experiences. A different argument would be that children in the afternoon class had a better experience because of the wealth of different experiences and the opportunity to practice choice more often. Data from the current study do not directly address this issue. However, it is likely that the children's choices during activity time were influenced by the total context of the classroom schedules for the day and the week. Afternoon children had a longer free choice time 5 days a week. Morning children had scheduled choice time 2 days a week for 30 minutes. The dynamics of this difference would be an appropriate topic for future study.

Supporters of "developmentally appropriate curriculum" for kindergarten children are probably happy to see results from the children's explanations for why they choose specific activities. The most common reason children in both classes gave for selecting a favorite choice was the opportunity to "build" or to "make" a physical object. The child's need or desire to physically act on the environment is a commonly noted characteristic of kindergarten age children.

Several individuals who draw educational implications from Piaget's theory call for "constructive learning" utilizing physical objects instead of pencil and paper activities (Bredekamp, 1993). These individuals may be nodding their heads in a collective gesture that means "We told you so." However, the data from this study noted in Descriptive Statement #9 basically tell us what children like or do not like about certain activities.

Some of the negative responses, although relatively few, confirm Shafir et al.'s idea that children make choices based upon their weighing different aspects of the choice activity. Some children did not go to an activity that they liked (big blocks) because they weighed the negative value of how long it took to clean up. This weighing behavior has serious consequences for both motivation and learning. The question for the teacher, then, is what are the children not learning as a result of such weighing.

Another question these data raise concerns the role the teacher plays in children's learning. This question is prominant today in relation to Vygotsky's zone of proximal development (ZPD). Rogoff and Wertsch (1984) have defined the ZPD as the level where a child cannot solve a problem alone but can solve it with help from an adult or another more competent individual such as an older child. Vygotsky emphasized how social interaction between the child and a "more competent one" leads the child toward greater cognitive competence. There is an apprentice quality to the ZPD as the child observes a more competent model and the more competent person learns to explain the situation or to redirect the child's focus and thinking. Bruner (1984) originally called this style of learning "scaffolding."

According to Seifert (1993) the ZPD points to the importance of adults or older children in the learning experiences of children and they further suggest that "watching and waiting for children to teach themselves makes little sense developmentally, in spite of its popularity as an ideology among practitioners" (p. 19). However, the theoretical basis for adult involvement in children's learning can be interpreted in more than one way. According to Seifert (1993), some early childhood programs apply the concept through careful observation, modeling of successful performance, and cooperative group work. Choice behavior may be an appropriate addition to Seifert's list. Adults could be especially effective participants in children's ZPD if the children themselves had selected the activity and the activity came from a carefully prepared array of constructivist options. This scenario makes it more likely that children would be motivated to participate and would not be bored by an adult's (teacher's) unnecessary assistance at easy tasks or by the adult's (teacher's) unhelpful assistance at tasks the child sees as overwhelming. Thus, research on children's choice behavior highlights the importance of children making choices of a complex nature during the kindergarten day and nonetheless opens the door for adults to assist children in a manner that contributes to, but does not dominate, their learning.

## CONCLUSION

Data from this study have portrayed the very complex nature of children's choice behavior in kindergarten and have generated additional pertinent questions. Teachers and researchers now have documentation that children are capable of, and, in fact, make choices during school time. Choices are made inside and outside the classroom and are present in both the open structure and more teacher-directed parts of daily schedules. Sometimes children choose not only what activities to do but also how to participate once there. We have now identified common examples of kindergarten choice and are more aware of children's reasons for selecting one option instead of another. Five- and six-year-old children are successful at weighing the relative, positive and negative features of individual choices. They are especially interested in choices that allow them to confront an object or product as exemplified by block play.

Researchers should be questioning how choice influences such important variables as student attitude, effort, and learning. Do children who have a choice demonstrate improvement on these three key variables when compared to children who have been told to participate in an activity? Teachers should also be asking questions about choice in their own classrooms. What choice opportunities are children given? What are the consequences of both providing and denying choice to students? These questions and others like them must be addressed as teachers plan an environment optimally suited to kin-dergarten children's social-emotional and cognitive development.

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# Balanced Literacy Within a Kindergarten Study of Woodland Animals

HELEN S. FAUL

A study of woodland animals was the content source for a balanced literacy program and an integrated curriculum in a kindergarten class. The literacy program included development of listening, speaking, vocabulary, understanding of story structure, phonemic awareness, writing, and word recognition, along with the spontaneous construction of sound-symbol correspondences and the differentiation of fiction and nonfiction. The integrated curriculum included science, mathematics, reading, oral and written expression, art, music, and expressive movement.

Animals have a universal appeal to children of all cultures and backgrounds. Building upon children's curiosity and interest seemed a natural way to create a sense of community in the classroom and allow children to become engaged in a literacy experience that built upon prior knowledge and nudged the learning process forward.

Children were given the opportunity to explore this interest through books, puppets, painting experiences, dramatization, math experiences, oral discussion, motor movement, music, and block building. A challenging learning environment was created first by me, the teacher, and extended through the children's activities and interests.

Anticipating the children's interest in animals, I placed books about forest animals and Ranger Rick magazines (1994) in our "book tubs" (which are accessible to the children after journal writing everyday). Children would finish their journal writing for the day and look at books in the book tubs on the tables. Each day, we would read one of the books chosen by a child from the "book tubs." The importance of reading to children is well documented. As children listen, they become familiar with story structure, a necessary literacy skill (Purcell-Gates, McIntyre, Freppon, 1995). Books become a source of pleasure and a source of information.

Talking about the stories or dramatizing the stories stimulated the children's interest in the science content and promoted their verbal and written expression. Vocabulary and language fluency were developed as the children talked about the stories or retold a story in dramatization. Retelling the stories, especially through dramatization, requires children to consider story sequence. In such retelling, they use phrases and sentences from the story, thus acquiring familiarity with "book language" (Cunningham & Allington, 1994). Some of this book langauge then transferred to their journal writing, either self-generated or copied from the books or from the environmental print around the room. The children became inter-

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ested in how to say or write what they wanted to express.

Dramatization became an important part of the day. The children engaged in puppet play with the forest animal puppets, built homes for the model animals with the blocks, sculptured animals in the playdoh center, and retold stories and poems.

Another literacy skill was developed as we read many different stories, discussing whether the story was real or fiction and listing the characteristics of each. I read the story, *Bears, Bears and More Bears* (Morris, 1993). All the facts about bears were listed. Then we would use the correct term -- fiction or nonfiction. Thus, the children were learning "book language."

Children also became aware of characters and setting of the stories as we determined fiction versus nonfiction. For example, in reading *Goldilocks and the Three Bears* (Brett, 1993), children identified the characters and illustrated their favorites. We discussed the different settings, defined the problem, and voiced opinions about Goldilock's behavior.

Two additional books enabled me to develop another important thinking and reading skill -- comparing and contrasting. We read *Sleepy Bear* (Vaughn, 1989), published by Rigby books, and Lydia Dabcovich's (1991) *Sleepy Bear*. We talked about the books and identified that the problem and main character of both books were the same but that there were many differences between the books. One book has only one setting and the other book has many. One book uses sounds and actions to tell the story: "crawl, crawl under the log" or "puff, puff up the hill." The other book states facts: "It is getting cold. It snows. The sun comes out." This comparison helps children to process and think as they hear the stories and then verbalize likenesses and differences.

Throughout the unit another book, *Whose Forest Is It?* (Williams, 1995), provided a further opportunity for dramatization and language development. This book also presented many opportunities for ongoing assessment to occur. The children dramatized the story by holding up face masks of the animals. Oral language skills were enhanced as the child holding the puppet would say, "Whose forest is this?" and the depicted animal would answer, "This is my forest." Children became aware of the question and answer structure in language. The children also made an "I can read book" to take home. Each day for five days they would draw a picture of the animal on a page where the following sentence was printed: "This is my forest," said the _________ (bear, raccoon, fox, or owl), whichever animal is the animal asking the question, "Whose forest is this?"

As the children were drawing the animal, I would note the children who copied the animal name onto the page. This on-going assessment indicated which children were aware of the printed word and the sounds of letters since they were able to decipher the correct word to print (DeFina, 1992). The assessment was in keeping with my goal of a balanced literacy program, one that fostered the development of phonemic awareness along with the other aspects discussed earlier.

The following example demonstrates a child's spontaneous construction of a sound-symbol correspondence. One day, Cameron was drawing a picture in his journal. When I came to him in order to respond to his journal entry, he said, "This is my raccoon and he has a mask." I asked him, "What letter could you write for raccoon?" His response was "R" and then he elaborated, "I can make r for raccoon like r for Ryan." Ryan is one of the children in our classroom, and Cameron had transferred his knowledge of the sound at the beginning of Ryan's name to the sound at the beginning of *raccoon*. Cameron recognized the phonemic similarity and demonstrated his construction of a sound-symbol correspondence. The association was particularly meaningful to him because he associated it with a child's name. Cameron was using that knowledge to write. This type of experience occurred repeatedly with different children as they engaged in journal writing and other activities. Surrounding the children with books, puppets, pictures, and poems to chant had immersed them in meaningful print and helped them construct understanding of sound-symbol correspondences in meaningful situations (Weaver, 1990).

Repetition of sounds, as in the following example, also contributed to the development of the children's phonemic awareness. One of our favorite activities was the dramatization of a song that we wrote together after reading the Wright Group (1990) book, *A Beaver's Tale*. We used the same pattern to write our song about some of the forest animals.

The bears in the forest go
thump, thump, thump,
thump, thump, thump,
thump, thump, thump
The bears in the forest go
thump, thump, thump
As they walk along.

The deer in the forest go
tap, tap, tap,
tap, tap, tap,
tap, tap, tap,
The deer in the forest go
tap, tap, tap,
As they run along.

The tail on the fox goes
swish, swish, swish,
swish, swish, swish,
swish, swish, swish.
The tail on the fox goes
swish, swish, swish,
As he runs along.

The feet on the mice go
creep, creep, creep,
creep, creep, creep,
creep, creep, creep.
The feet on the mice go
creep, creep, creep,
As he runs from the owl.

The feet on the rabbit go
hop, hop, hop,
hop, hop, hop,
hop, hop, hop,
The feet on the rabbit go
hop, hop, hop,
As he looks for food.

(sung to the tune of "The Wheels of the Bus Go Round and Round").

After singing the song, motor movement was a natural outgrowth as we imitated the actions of the animals, walking, running, creeping, and hopping around the room.

Integration of science and our math occurred as the children learned a number poem and then made a "take home" book to read. The poem was written as we orally discussed animals that lived in a tree. Many children also recognized the rhyming words in the poem, which we then highlighted. The ability to hear rhyming words is an excellent indicator that children are learning to control language (Cunningham, 1995). They are becoming aware of the phonemes in language. A counting rhyme is highly rhythmic and appealing to children. The children enjoyed clapping the beat.

One owl in a tree,
Two mice look at me,
Three squirrels run around,
Four acorns on the ground,
Five trees very tall,
What a special home for all!

The math center had animals to count and match to the numbers. This poem was also printed on the bulletin board with one owl, two mice, three squirrels, four acorns, and five trees to match the number symbols.

Another book called, *A Counting We Will Go,* (Williams, 1994) led to an integrated language arts, math, and art activity. We created a "copy change" story, and then made our class fold out, interactive, big book. The children named animals, and then we thought of something that rhymed with the animal. Following are several of their rhymes:

Bears on chairs
Ants on pants
Mice on dice

After painting the background for our big book, the children made the animals out of construction paper. Each page had a certain number, and the children worked with the math concept of equal sets. For example, 3 ants on pants meant that there could be only 3 pairs of pants for the ants so as to create equal sets. Velcro was placed on each animal so the children could use the book interactively and take the animals on and off. This activity also increased phonemic awareness as children worked with rhyming.

Science skills were developed as the children learned to observe likenesses and differences and to predict animal needs. We made charts of the different animal characteristics as we read about different animals. The children learned that animals have different outer coverings -- skin, fur, scales, shells, and feathers. They would classify the animals according to their coverings. The children became aware that animals adapt so as to provide for their needs: food, shelter, water, and location. We used some "Project Wild" (1986) activities to discover these needs. We learned that animals are diverse but all share common characteristics such as growing, reproducing, and needing food to do so.

The charts enabled us to notice how animal habitats determined the food they ate, their shelter and how they protected themselves. The "big idea" that we developed was that some things in the forest are alive and some are not. The following questions were examined: What characteristics determine if matter is alive or not alive? Does every living thing have the same characteristics? Does every non-living thing have the same characteristics? I used nature walks to develop observation skills. The children would observe items and draw them. Then we would sort and classify according to the characteristics that determine if matter is alive or not-alive. This activity enabled the children to learn that living things have characteristics that can be observed and described.

As the theme progressed, the children painted animals and dictated stories about the animals. In the art center, the class began to make trees and paste them on a mural size piece of paper. This led to a discussion of the importance of trees and where various animals live in the forest. The children made crayon drawings of animals and pasted them on a tree mural, and our forest began to emerge. A natural progression led to a chart depicting which forest animal was our favorite. Many of the children drew pictures in their journals depicting their favorite animal. "Circle time" was devoted to sorting and classifying the animals according to their habitat. This enabled the children to develop additional vocabulary as they named the animals and their respective habitat.

The children often would choose to sort animal cards that had been placed in the picture sorting box. They sorted according to habitat or color or some other attribute as they worked in their free choice centers. This activity developed classification skills. Children noticed likenesses and differences as they placed trees on the mural in the art center, and they became aware of shape and size. All these activities were developing observation skills, awareness of likenesses and differences, classification skills, vocabulary growth, and phonemic awareness.

Shared writing about a particular animal gave me the opportunity to model my thinking as I wrote in front of the children on a large pad of paper. Throughout this process, the children were developing vocabulary, observation skills, and phonic skills. Allyssa said, "I like the squirrel because he eats nuts." As I wrote this sentence in front of the children, I continually talked through the process.

> When I write the word, "I,"
> do I use the lower case
> or the upper case?
>
> Can I start the word 'like'
> here (*right next to the I*) or
> do I leave a space?
>
> Nut -- how do I write
> n-n-n (drawing out
> the sound)?

Modeling the writing and thinking process gives children strategies to employ when they write in journals or during "free choice time" in the writing center.

Children's confidence in their ability to learn to read was enhanced through shared reading of the poems and other material we wrote. The children would say: "I can read it." or "I can find the word, *mice*."

Throughout the development of the theme on woodland animals, many skills were integrated in a meaningful manner. Children's natural interest in animals provided the catalyst for a balanced literacy program that integrated all the subject areas in the kindergarten curriculum. The meaningful context contributed to the balanced literacy program.

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# Kindergarten Education: Theory, Research, and Practice

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# Piaget's Symbolic Function and the Foundation of Reading

JEANETTE MCCARTHY GALLAGHER

This is the first in a series of articles providing suggestions for communication with parents on the foundation of reading. Kindergarten teachers know the importance of such activities as pretend play and the development of imagery. Parents are often more concerned about activities commonly associated with reading (learning the alphabet and phonics). Piaget's developmental epistemology, specifically his symbolic function, are presented as a framework. Aspects of the symbolic function such as language, pretend play, imagery and drawing are placed on equal footing relative to the foundation of reading.

> Karl (5 years old)--deeply involved in the application of red paint to the paper... "This is a big tunnel and I'm inside and I'm lost..." (the paint brush was going round and round) "There's a big storm coming." (big splash of red paint) "Here's my mom, she's looking for me. She can't find me; she's got a flashlight" (a small spot of white paper is showing through the red paint) "I'm scared, my mom's hollering and it's getting dark..." (more red paint -- a sigh) "Oh, boy! She didn't find me." (Koste, 1987, p. 14)

Koste captures the marvelous weaving of the web of the symbolic system which is the foundation of reading. The purpose of this series of articles on the symbolic system is to provide teachers with points of communication that may be used in letters to parents. Simply stated, how can early childhood teachers provide justifications for their choice of curriculum and the activities that flow from that curriculum?

From Koste's (1987) observation of Karl (and 3,000 students over a period of 14 years) it is easy to make deductions. Drawing is important in this classroom. But talking about the drawing is equally important. Karl weaves an imaginative story while his production takes on more complexity. Many symbols are at work: drawing, talking, imitating and imagining.

Some parents find it difficult to relate such use of symbols in early childhood to the foundations of reading. It is imperative that teachers provide information to parents on how the school day is filled, and why it is filled that way.

I became interested in addressing the issue of communication between teachers and parents almost

---

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by accident. A few years ago I was given the opportunity to present a series of workshops on Piaget's theory to groups of early childhood teachers. During the workshops I distributed a questionnaire asking the teachers to indicate by percentages how they divide their classroom time among various activities. The activities included nature walks, storytelling, learning the alphabet and numbers, and playing house. The resulting data showed clearly that teachers realized the importance of storytelling, nature walks and playing house for the development of imagination and language. The percentage of time allotted for these activities was much higher than for the narrow activity of learning letters and numbers.

Several of the teachers asked if they could distribute a similar questionnaire to parents asking which activities parents considered important. Several months later I had collected over 300 questionnaires equally divided between teachers and parents. The data were not collected randomly so it was not possible for me to publish the results. This was unfortunate because the results were disturbing. Parents allotted almost no time for nature walks, and less time than teachers to activities like storytelling and playing house. Their allotment of time for learning the alphabet and numbers was double that of teachers.

Both parents and teachers were asked to make written statements at the bottom of the questionnaire. For example, one mother commented, "Susie can go out to play at her preschool but if she is swinging she better be reciting the alphabet."

### THE IMPORTANCE OF AN EPISTEMOLOGICAL FRAMEWORK

Educators are now realizing the importance of an epistemological framework to guide the process of education. Most teachers have studied some form of epistemology, the branch of philosophy that deals with the study of knowledge. This discipline has explored the location and meaning of knowledge and how knowledge increases (Brown, 1993). Cunningham and Fitzgerald (1996) outlined the effect of an epistemological framework upon an approach to teaching.

> By examining the epistemological underpinnings in our own work as well as in the work of others, we can bring to light pre-suppositions and assumptions that might otherwise go unquestioned, and many of these presuppositions and assumptions have immediate practical consequences in that they influence what people believe and how they act... Clarifying one's own epistemological stance as a researcher and/or teacher can lead to a self-awareness and understanding often associated with enhanced personal satisfaction.... (p. 26)

Effective communication of these presuppositions and assumptions to parents can also increase the teachers' personal satisfaction while at the same time enhancing the parents' understanding of the teachers' methods of instruction.

### THE SYMBOLIC FUNCTION

Piaget's development epistemology has been proposed for many years as a framework for the decisions involved in curriculum choices at the kindergarten level (Kamii, 1975; Kamii & DeVries, 1978). What has not been stressed, however, is the power of Piaget's symbolic function (system) as a guide. The symbolic function, as defined by Piaget and Inhelder (1969) consists

> ...in the ability to represent something (a signified something: object event, conceptual scheme, etc.) by means of a "signifier" which is differentiated and which serves only a representative purpose: language, mental image, symbolic gesture, and so on. (p. 51)

From around age two through age six, the child is rapidly building a symbol system to represent the world. Language, including emerging literacy, is only one of the symbolic areas involved in this rapid representation. The foundations of reading include many symbolic areas which will be outlined below.

No doubt parents' perception of the reading process has been influenced to a great degree by a quarter century of *Sesame Street*. The heavy emphasis upon letters, initial sounds of words and learning the alphabet has led many parents to believe that these are the foundation of learning to read. Mates and Strommen (1996) recently provided an insightful critique of *Sesame Street*. They draw from the concept of emerging literacy (Ferreiro & Teberosky, 1982; Teale & Sulzby, 1989) and Piaget's developmental epistemology by emphasizing that learning to read

> ...is a continuous process that begins well before children receive formal instruction in reading or writing. Children construct their own ideas about the workings of the written code in much the same way they construct theories about number, cause and effect, and other aspects of their world... (p. 300)

There is a broader aspect of literacy before schooling and one that directs the curriculum of the majority of early childhood teachers. Teachers are fully aware that the richer the language experiences of the child the richer the base for learning how to read. This symbol system of language, however, needs to be related to other ways that children use symbols, such as in play and in drawing. Thus, the broader aspect of emerging literacy is rooted not just in language but in a complete symbol system which Piaget calls the symbolic function as defined above (Piaget, 1952; Piaget & Inhelder, 1969; Inhelder, 1976).

The clearest way to understand the meaning of the symbolic function is to view it as the manner in which young children internally represent the world (Gallagher & Reid, 1983). These internal representations are manifested not only by language but also by imitation, symbolic play (primarily pretend play), mental imagery, and drawing. Notice that in each of these areas children are able to represent absent objects. For example, children often draw objects that are not present. Also notice that each area may enrich language but can function apart from language, as at times when children imitate facial expressions or engage in pretend play using only gestures.

Let us consider the areas of the symbolic function and focus on ways of communicating to parents the importance of each.

### *Language*

> *Kindergarten classroom - afternoon session. Mixter School--Lincoln Park, Michigan*
>
> During 'free choice' period one little boy chose to play with clay. He molded the clay into different shapes and then he put these shapes of clay on his face. He had some trouble getting the clay to stick to his face but finally did manage.
>
> He had a small clay hat on his head. Triangles of clay were on his forehead and were supposed to be eyebrows. He also had a mustache. He couldn't get the clay to stay on his upper lip and so he looped it over his nose.
>
> He got up from his table and walked over to me. With hands in his pockets and rocking on his heels and toes, he said, "Meet Mr. Shrink-Man." (I have no idea who Mr. Shrink-Man is.) (Koste, 1987; p. 51).

This kindergarten child provides a dramatic use of language as a vehicle of communication in a social world. It is as if this child is bursting with the need to share his pretend play with another person.

Piaget (1952; Piaget & Inhelder, 1969) stressed, more than any other psychologist, the development of thought before language. A younger child with a smaller vocabulary could still have indulged in this pretend play due to the thought structures which assisted the child in determining what possibilities there were in playing with clay. Piaget and Inhelder (1969) emphasized that the symbolic function

> ...detaches thought from action and is the source of representation. Language plays a particularly important role in this formative process. Unlike images and other semiotic [symbolic] instruments, which are created by the individual as the need arises, language has already been elaborated socially and contains a notation for an entire system of cognitive instruments, relationships, classifications, etc.) for use in the service of thought. The individual learns this system and then proceeds to enrich it. (p. 86-87)

Language, therefore, has social constraints that other areas of the symbolic function do not possess. Attention must be paid to correct and polite usage.

Informal "languages", those with fewer constraints, flourish in early childhood settings. When small children perform exercises such as pretending to dance like trees blowing in the wind, they are representing the world in symbols of movement. They also involve themselves in the symbolic "language" of facial expressions and gestures when dramatizing a story.

Both formal and informal language activities play a powerful role in the foundation of reading. Children who are in a sea of symbols by singing, pretending, dancing, rhyming, dramatizing and drawing bring a rich background to formal reading instruction. For these children, the formalities of reading and writing in order to represent and expand their world are supported by a host of symbol systems.

### *Imitation and Pretend Play*

> The other day the children in the neighborhood had about seven boxes lined up along the sidewalk in back of a red wagon. There were about two children on each box and one little boy in the wagon. The children were all around 4, 5, and 6 years of age. One boy was walking along by the side of the train collecting tickets. Then he sat down in the wagon; he apparently became the engineer...He had one of the youngest children sitting on the back end of the wagon, and when he got in the wagon to start his train, he turned around to this little boy and said, "Blow." The little boy was the train whistle. (Koste, 1987, p. 54)

What is striking about this example of pretend play is the almost total lack of language. The event, however, is rich in symbols: boxes for train cars, the hand motions for passing tickets, sitting in front as engineer and sitting back as a whistle.

As noted in the section on language, pretend play may be manifested before the child uses language or when vocabulary is very limited. Inhelder (1976) was especially fond of this event:

> A child who makes a shell slide along a box saying "meow" knows very well that his shell is not a cat, but symbolizes one and that the box is not a wall, but represents one. Even if at first he regards the word "cat" as an intrinsic part of the animal, the word as such is for him a symbolizer...and not the object itself. (p.158)

Later as the child begins to read, the printed word "cat" becomes a symbol for the word and, on the next level, the symbol for the animal.

Bretherton (1984, p. 8) described how representation is enacted in the pretend play of "train" and "cat along wall" cited above: "Role and action representation are initially affected by the availability of realistic props. Later objects can be mentally transformed into other objects and imaginary props can be created through miming or language."

The more spontaneously the imitations in pretend play are enacted and the greater the freedom from adult intervention, the richer the opportunities will be for growth of the symbol system. Pretend play, according to Piaget (1952), may actually be a form of emotional release. The child enters into a world of her own making with her own set of rules.

Pretend play will blossom in classrooms that are not rigidly structured. Parents need to understand that a kindergarten classroom needs large open spaces and props for play of all kinds, but especially pretend play. Children need a "stage" to dramatize their stories and a space for the audience.

### *Mental Imagery*

Piaget & Inhelder (1971) studied imagery in relation to memory. Images, as symbols, need to be remembered before they can be described. Gradually these memories become more and more organized.

When the child is able to form mental images, a powerful manner of representing the world has developed. Images permit the child to have pictures in the mind so that an event or a sequence of events may be carried out internally. Teachers have many opportunities for children to practice forming images. Children may close their eyes during the reading of a poem and then describe the "pictures" that they formed. When children are asked to predict the ending of a story, they are drawing upon mental imagery to remember the past sequence of events and to imagine the final events.

In the early grades, as reading progresses, these exercises in the formation of mental imagery will form the foundation for reading comprehension. The more clearly the child sets a mental stage while reading, the richer the interactions with text. In a Piagetian framework, the text becomes transformed through interactions with the child's symbolic system (Ferreiro & Teberosky, 1979).

### *Drawing*

Drawing by children has rarely been considered as related to the symbolic foundation needed for reading. This has all been changed by the new movement in early childhood education under the direction of the Italian educator, Loris Malaguzzi, founder of the Reggio Emilia early childhood education system (Edwards, Gandini & Forman, 1993; New, 1990). Children in these Italian schools use drawing as a graphic language. For example, after several trips to a supermarket, the children cooperate to make detailed drawings of their observations on a sheet of paper. Katz (1993, p. 21) commented after a visit to one of the schools

> ...the rows of baskets, with or without children under foot, the cashiers, and so forth, are captured in remarkable detail in the drawing of the supermarket scene.

Teachers are trained to ask the children what they have drawn, and those comments are added on the paper. The representational drawing of realistic objects does not inhibit these children from making imaginative drawings on other occasions.

The procedure of working together on large sheets of paper provides children with a "language" to draw their story relying on the mental images enriched during repeated trips to the supermarket. This procedure becomes a logical link to the process of reading.

Parents need to understand the power of drawing in the development of symbols and how such activities relate to the foundation of reading. In sum, drawing is not just an activity to "fill in time."

## CONCLUSIONS

Teachers bring their epistemological viewpoints on the formation of knowledge to their curriculum decisions. Piaget's developmental epistemology, specifically its analysis of the formation of the symbol system or function, was selected as the basis for understanding the foundation of reading. Language activities, imitation and pretend play, the development of imagery, and opportunities for drawing were all viewed as equally important in the kindergarten curriculum.

In future articles each of the areas of the symbolic function will be explored with supporting research and suggested applications. In addition, a model letter to parents will be presented at the end of each article with suggestions for adapting to teachers' needs.

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# Drawing to Write: The Role of Drawing in the Writing Processes of Kindergarten and Primary Grade Children

CATHERINE C. DUCHARME

Qualitative research design formed the methodology of this study that examined the role of drawing in the writing processes of children ages five to nine. This study attempted to answer the following questions: What role does drawing play in the writing processes of young children? How does the role of drawing change with the individual's growth as a writer?

Sixty-seven children enrolled in a multiage classroom (K-3) were systematically observed to identify and describe various drawing functions in their writing processes. The role of drawing was found to be important in writing development; three major functions and nine specific functions were identified and described. The data revealed patterns in the way the role of drawing changed with individual growth. Implications for early childhood educational programs were discussed, including the importance of preserving learning environments that are broad-based and that allow for self-selection of drawing and writing activities in order to facilitate growth.

This study analyzed the role of drawing in the writing processes of primary grade children. Recent studies of children's writing refer to a connection between drawing and writing. Many children draw while engaged in writing behavior. Some children draw before writing, while others draw after or during the writing act. Some children choose not to draw at all. In any case, drawing appears to serve a function for many children. The goal of this present study was to answer these questions: What is the function of drawing in the writing process and how does it vary from one individual to another? Does the role of drawing in children's writing behavior change with the child's growth and development?

The drawing and writing connection has been discussed throughout recent literature on literacy development in the young child (Baghban, 1984; Bissex, 1980; Calkins, 1983, 1986; Dyson, 1986, 1989, 1993; Graves, 1973, 1981; Harste, Woodward, & Burke, 1984). Calkins (1983) and Graves (1983) have written about the relationship of drawing to writing as a strategy for the planning phase during the writing process. However, Calkins (1986) later questioned the notion that drawing is merely a pre-writing strategy. Bissex (1980) noted in her study of her son's writing develop-

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ment that "drawing tended to be more illustration than context" (p. 38). Bissex (1980) also commented on the drawing/writing connection:

> Although the close relationship between drawing and writing is a commonplace in histories of writing systems, our society regards drawing so much as pictorial and writing so much as phonetic that the relation between the two is less evident to adults than to children, who are not yet as fully acculturated. (p. 202)

It appears that there is a rich intermingling of symbolic processes as young children develop literacy behaviors (Bissex, 1980; Dyson, 1986). In a case study of her daughter from birth to age three, Baghban (1984) noted that "Giti used oral language, reading, writing, and drawing as partners within a larger system of mutually reinforcing processes" (p. 97).

Few studies have been conducted on the role of drawing in the writing processes of young children. With the exception of Dyson's (1986; 1989; 1993) work, only two recent studies could be found that specifically explore the relationships between drawing and writing. Skupa (1985) conducted a study with thirty-nine second graders and concluded that drawing is a viable planning strategy for second grade children. A study by Zalusky (1982) analyzed the relationships between writing and drawing in first grade children. Her statistical analysis revealed a strong correlation between drawing and writing.

In this present study young children were observed as they engaged in the activities of drawing and writing in order to analyze relationships between these two processes. This research was not a study of the children's graphic development, but rather an examination of drawing behavior as it related to the emergence of writing. The findings of this study of the role of drawing in the writing process are limited to the classroom setting and the group of children studied. Although my analysis and interpretations are firmly grounded in the data, they must be tested by other researchers among other five- to nine-year-olds in varying classroom environments.

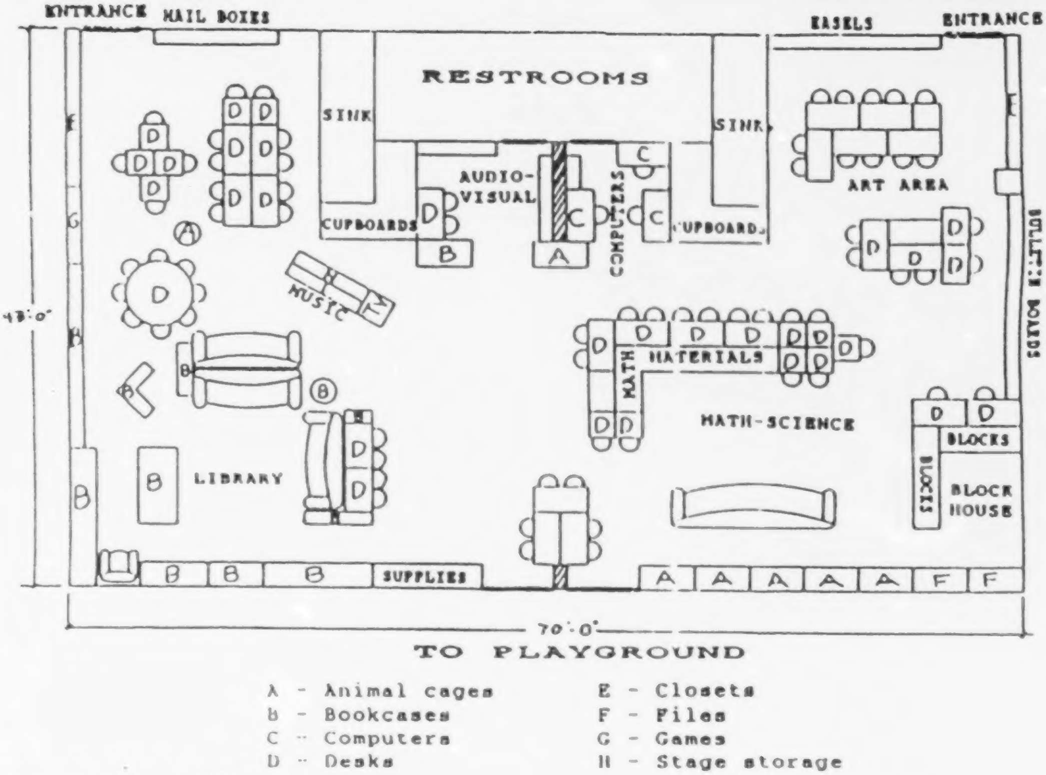
## METHOD

### *Participants*

Located in a suburb of Southern California, the children in this multigrade classroom were from middle and upper-middle class homes. All of the children were white, including one male student with Down Syndrome. The class consisted of sixty-seven children ranging in age from five to nine years, two teachers, and an aide. Drawing and writing activities were an integral daily and well-established routine for the children and adults alike.

### *Setting*

***The classroom.*** The classroom consisted of a forty-three by seventy foot space. The two teachers had arranged and organized the room into


ENTRANCE
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MUSIC
MATH
MATERIALS
MATH-SCIENCE
BLOCKS
BLOCKS
BLOCK HOUSE
LIBRARY
SUPPLIES
48'0"
70'0"
TO PLAYGROUND
A - Animal cages
B - Bookcases
C - Computers
D - Desks
E - Closets
F - Files
G - Games
H - Stage storage

*Figure 1.* **Map of the Classroom**

several small areas for activities (See Figure 1). The classroom library area consisted of three couches and two comfortable chairs, along with book display units holding more than 1,000 books. One entire lengthwise side of the classroom was bordered by windows and a ledge. On the ledge there were many large, potted, rare plants along with cages housing several birds, a chinchilla, and other animals that came to visit during the school year. In other corners and alcoves in the room, there were aquariums filled with snakes, turtles, and tropical fish.

Each child had a desk in which to keep belongings. Each also had a mailbox. There was a large open space on the carpeted floor that served as a meeting place for class discussions, group sharing, and singing.

***The curriculum.*** The teachers developed an emerging curriculum with the children. The daily schedule described below was followed each morning from 8:00 A.M. to 12:00 P.M. As the children entered the classroom, they went to acknowledge their attendance by moving their round name tag to the peg board labeled "I am here. It is (the day's date)." Then the children went to their desks where they would choose to do one of their morning jobs - reading, writing, or math. The children would choose an activity and begin immediately working on it. Throughout the morning, every child was expected to do some reading, some writing, and some math. If the children completed some work in each of these areas, they could do additional reading, writing, and math, or hold one of the classroom pets, or play games.

The children were not forced to adhere to a set curriculum. On the contrary, they chose their own activities within a carefully designed classroom structure with teachers who respected each of them as individuals and held high expectations for their growth and development.

Possible writing activities included Picture Writing, Writing Book, and Computer Writing. The children were allowed to draw in conjunction with writing activities with one exception. If the children chose to write in their Writing Book, they were not allowed to draw in it. Otherwise, the children were allowed to draw before, during, and after writing. After the children wrote in pencil, they would have their writing proofread, dated, and initialed by an adult. Then the children would "ink" the piece of writing with colored felt pens. If the children chose to write in their Writing Book, they would not be expected to "ink" their writing. They would, however, have their writing proofread, dated, and initialed by an adult.

Six computers were in the classroom. If the children chose to work on the computer, they would sign up for either Computer Drawing or Computer Writing. A supervisory parent would permit the next child on the list to come to work on the computers as availability allowed.

### *Design*

Qualitative research methods were used in this study. Prior to entering the field, several foreshadowed questions were composed to guide the research. The selection of the classroom was based on specific pre-determined criteria. Various "slices of data" were gathered in the field including observational field notes, unstructured interviews, audio recordings, daily student products, and data log entries charting student behaviors. Data collection and analysis occurred simultaneously. The ongoing analysis of the data facilitated the formulation of categories that naturally emerged from the data, as well as provided future directions for inquiry. Data analysis was systematic and inductive; categories and patterns of analysis were firmly grounded in the data.

***Research questions***. Qualitative researchers often use foreshadowed questions to guide their research (Bogdan & Biklen, 1992; Goetz & LeCompte, 1984). The following questions were formulated to focus this study:

1. In what ways does drawing affect writing development in individual children?

| Child's Name<br>Birthdate | Creating = CR<br>Painting = P<br>Drawing = D | Writing | Inking | Writing Book | Computer Drawing | Computer Writing |
|---|---|---|---|---|---|---|
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

*Figure 2.* **Daily Log of Drawing and Writing Activities**

2. What developmental patterns can be observed with regard to the drawing function and the number of words contained in the written products?

### *Procedures*

Descriptive ethnographic data were collected over a nine-month period from September to May. As a participant observer, I was in the classroom from 8:00 A.M. to 12:00 P.M. during the children's independent work time for a total of 125 hours. Six types of ethnographic data were collected including: (1) a chart of each child's daily drawing and writing activities for forty-eight school days (See Figure 2), (2) children's dated drawing and writing products, (3) audio recordings of individuals as they were engaged in drawing/writing acts, (4) observational notes to form a core of data, (5) dated log entries charting individual student's writing acts noting when the child drew and the function drawing appeared to serve, and (6) informal child and teacher interviews.

### *Hypothesis*

As a result of a review of the current research, as well as ten years of experience as a classroom teacher, I hypothesized that drawing would serve an important role in the composing process and that the function of drawing would change with the developmental growth of children throughout the primary grade school years. I reasoned that the youngest children would rely on a rich intermingling of drawing and writing to convey their messages, while older children would be more able to convey their meaning through the use of written language, thus not needing to rely on drawing within the composing process.

## RESULTS AND DISCUSSION

The following chart summarizes the children's activities over the forty-eight school days (See Table 1). The resulting totals support the hypothesis that the role of drawing in the writing process is important to the youngest children as evidenced in the frequency of the activity among the kindergarten and first grade students. The findings also support the hypothesis that the role of drawing changes from kindergarten to third grade. From a total of 825 drawings, 32% were drawn by kindergartners, 25% by first graders, 26% by second graders, and only

*Table 1*
**Daily Drawing and Writing Activities**

| | Class Activities | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Grade Level | CR | P | D | PW | I | WB | CD | CW |
| K<br>(N=17) | 15 | 41 | 263 | 331 | 273 | 74 | 29 | 36 |
| % of Total Frequency | 32 | 47 | 32 | 29 | 34 | 14 | 32 | 23 |
| 1st<br>(N=15) | 16 | 25 | 207 | 290 | 209 | 103 | 28 | 34 |
| % of Total Frequency | 34 | 28 | 25 | 26 | 26 | 20 | 30 | 22 |
| 2nd<br>(N=19) | 12 | 14 | 214 | 316 | 179 | 192 | 18 | 38 |
| % of Total Frequency | 26 | 16 | 26 | 28 | 23 | 38 | 20 | 24 |
| 3rd<br>(N=12) | 4 | 8 | 141 | 196 | 135 | 144 | 17 | 48 |
| % of Total Frequency | 8 | 9 | 17 | 17 | 17 | 28 | 18 | 31 |
| Total Frequency | 47 | 88 | 825 | 1133 | 796 | 513 | 92 | 156 |

Key: CR = Creating
P = Painting
D = Drawing
PW = Picture Writing
I = Inking
WB = Writing Book
CD = Computer Drawing
CW= Computer Writing (Word Processor)

17% by third graders. The amount of Picture Writing decreased with increased age from 29% of all Picture Writing done by the younger children to only 17% done by the oldest members of the class. Kindergartners completed 14% of all the Writing Book activities, whereas third grades completed 28% of the total.

While these findings are merely suggestive, they do support the premise that the role of drawing in the writing process provides an important function especially for young children. These findings also raise the question of how the role of drawing changes with development.

Further analysis of the data examined this question and other questions about the role of drawing for individuals. The data analyses also examined the kinds of functions drawing had in the writing process. The results of these analyses follow, beginning with general findings about the functions of drawing and related time dimensions.

| Date | Child's Name | Grade | When the Child Draws | Drawing Functions |
|---|---|---|---|---|
| 9/9 | Paul | K | before | -provides object to be labeled with words (This is a...) |
| 1/5 | Mark | 1 | before<br>during | -objects to label<br>-elaboration<br>-addition of detail to match text<br>-refresh his ideas<br>-revive his thought |
| 1/5 | Leah | 2 | before | -clarification (for others) So they can see it<br>-re-creates a true event in her life<br>-provides ideas/context |
| 1/14 | Adam | 3 | before | -provides focus or reduction of possibilities in theme<br>-provides objects to be labeled |
| | | | during | -clarification; drawing more detailed than word description, but congruent<br>-transitional; drawing pushes ahead more detail in the writing |
| 3/3 | Alison | 1 | before | -re-creates a personal experience<br>-provides object to label (This is my...) |
| | | | after | -illustration of the text<br>-congruent |
| 3/3 | Sommer | 2 | no drawing | -Writing Book entry (true)<br>-personal experience<br>-(all other entries are true, too) |

*Figure 3.* **Sample Entries of Logged Drawing Functions**

### *Identification of Drawing Functions*

A total of 199 drawing and writing activities were recorded on a chart. (Figure 3 provides an illustration of sample entries). The record chart was filled in daily, from September to May, as soon as possible after the field observation. As the study progressed, the various drawing function categories emerged from the data. Upon completion of the study, a summary list was compiled of the various functions drawing appeared to serve for the young writers. The subsequent list was refined yielding three basic functions and nine specific functions of drawing in the writing processes of the sixty-seven primary grade children:

- 1.0 Contextual
    - 1.1 Objects to label
    - 1.2 Focus or general theme
    - 1.3 Re-creates an event or experience
    - 1.4 Access to imaginary worlds
    - 1.5 Pleasurable activity
- 2.0 Communicative
    - 2.1 Clarification
    - 2.2 Illustration
    - 2.3 Decoration
- 3.0 Transitional
    - 3.1 Maintains and supports the flow of ideas

Drawing provided contextual, communicative, and transitional functions for the young writers. Often these various drawing functions overlapped in the child's writing process. It was not uncommon in the observations to note that one child's drawing behavior may provide a context for writing as well as a transitional function during the actual writing act itself.

The overlapping functions occurred in various time combinations. Some children drew before, during, and after writing. Some children drew only before writing, while others drew only after they finished writing. Some children vacillated between drawing and writing; drawing was observed to occur during the writing episode. Table 2 summarizes when the children engaged in drawing during the writing process (before, during or after writing). The table reveals that most of the drawing was done before the writing. Fewer observations were made of children drawing during and after writing.

Several trends are evident from the summary chart as well. The third grade children were observed drawing less often before writing than the younger (kindergarten, first, and second grade) children. The older children drew after writing more often than the younger children. More first graders drew during the writing act than any other age group.

Some children were observed writing in their Writing Books, thus not drawing at all. These thirty-seven instances revealed similar characteristics. The majority of the children's writings without pictures

*Table 2*

**Summary Chart of When Children Draw**

| Grade Level | K | 1 | 2 | 3 |
|---|---|---|---|---|
| Number of Individuals | 19 | 15 | 19 | 13 |
| Number of Observations | 52 | 47 | 56 | 44 |
| Before | 40 | 36 | 45 | 27 |
| During | 3 | 6 | 2 | 2 |
| After | 4 | 2 | 2 | 8 |
| No drawing | 8 | 10 | 8 | 11 |

were focused on (*a*) true events which had taken place in their lives or (*b*) expressions of their feelings. There were only three exceptions to this pattern. Two second grade children wrote imaginary stories in their Writing Books without the aid of drawing, and one first grade child wrote a Mother Goose rhyme from memory without drawing.

Other observable patterns of the role of drawing in the writing process became evident through the tabulation of three factors: (1) grade level, (2) specific drawing function, and (3) when the drawing activity occurred with the writing process. (See Tables 3 and 4). More drawing was done by all of the children before writing than at any other time. The drawing established a context for writing by providing (*a*) objects to be labeled, (*b*) a focus or general theme, (*c*) the re-creation of an event or personal experience, (*d*) access to invented imaginary worlds, and (*e*) a pleasurable activity in itself that often resulted in the generation of ideas for writing.

*Table 3*

**Frequency of Drawing Functions Across Grade Levels**

| Drawing Function | K | 1 | 2 | 3 | Total Frequency |
|---|---|---|---|---|---|
| 1.1 Objects to label | 23 | 25 | 28 | 11 | 78 |
| 1.2 Focus/theme | 12 | 10 | 20 | 17 | 59 |
| 1.3 Re-creates an experience | 4 | 2 | 4 | 4 | 14 |
| 1.4 Access to imaginary worlds | 6 | 12 | 2 | 3 | 23 |
| 1.5 Pleasurable activity | 10 | 6 | 2 | 8 | 26 |
| 2.1 Clarification | 1 | 3 | 4 | 6 | 14 |
| 2.2 Illustration | 1 | 2 | 2 | 8 | 13 |
| 2.3 Decoration | 3 | 0 | 3 | 3 | 9 |
| 3.1 Maintains and supports flow of ideas | 2 | 14 | 3 | 6 | 25 |

*Table 4*

**The Relationship Between the Drawing Functions and When They Occurred in the Writing Act**

| Drawing Function | Total Frequency | Occurence of drawing behavior in writing act | | |
|---|---|---|---|---|
| | | Before | During | After |
| 1.1 Objects to label | 78 | 78 | 0 | 0 |
| 1.2 Focus/theme | 59 | 59 | 0 | 0 |
| 1.3 Re-creates an experience | 14 | 14 | 0 | 0 |
| 1.4 Access to imaginary worlds | 23 | 23 | 0 | 0 |
| 1.5 Pleasurable activity | 26 | 26 | 0 | 1 |
| 2.1 Clarification | 14 | 4 | 7 | 3 |
| 2.2 Illustration | 13 | 2 | 0 | 11 |
| 2.3 Decoration | 9 | 2 | 0 | 7 |
| 3.1 Maintains and supports flow of ideas | 25 | 0 | 25 | 0 |

The frequency of the different drawing functions and the time of their usage within the writing process revealed that the various drawing functions appeared at different times during the writing process. For example, drawing served a contextual function for children prior to the writing, and the communicative function of drawing was apparent both during and after writing, although most often afterwards. The transitional function of drawing appeared during the actual writing act with only four exceptions. Further elaboration of these functions is presented next in the discussion about each specific drawing function.

### *1.0 The Contextual Function*

*1.1 Objects for labeling.* The most frequent function of drawing for the children in this study was to provide for objects that could be labeled with words. The youngest children developed a recurring phrase to begin their labeling stories. One child consistently drew pictures of objects and wrote "Here's a ...." Other young children labeled their drawings with words, beginning with "This is ...."

Table 3 shows a significant reduction in the frequency of the observed behavior among the children in this study from an average of 25 among kindergarten, first, and second grade children to 11 among the third grade children. Figures 4 and 5 illustrate a story and picture jointly composed on the computer by two eight-year-old boys. They drew the picture on the computer prior to composing their story with the aid of the word processor. From the first four sentences it would appear that the drawing provided an initial object to label and describe; however, the two boys venture beyond the limitation of a labeling activity to produce a simple narrative. The

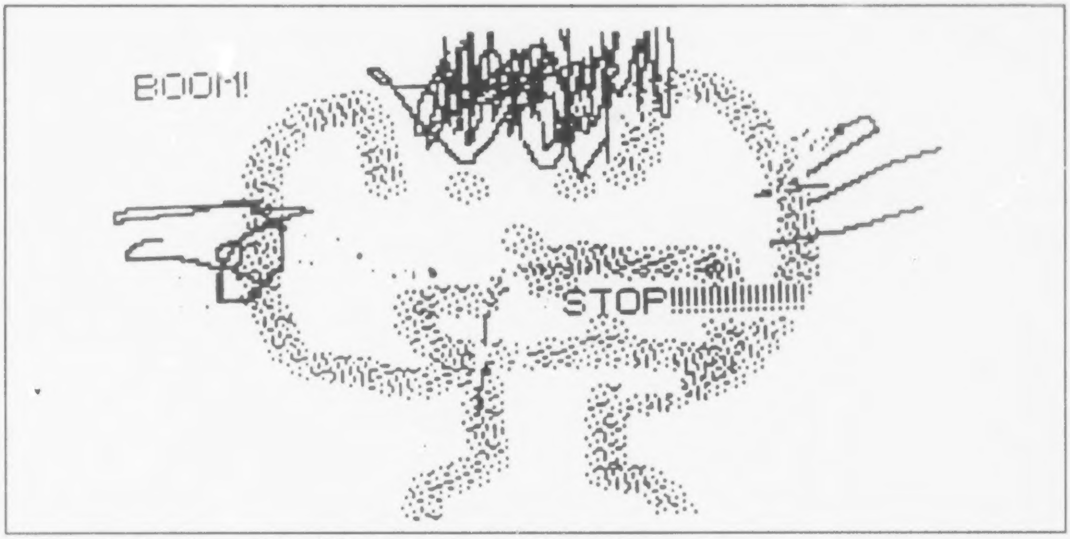


*Figure 4.* **Justin and Bobby's Computer Drawing**

This is Kari. She has a hundred billion cuckoo clocks. There are springs flying out of her head. She is going to take off. An elf is hanging out of her mouth saying, "Stop it. I've got to fix Kari's brain, and take out the cuckoo clocks." All of a suddden there is this big "BOOM!" and Kari takes off like a rocket. She hits a branch on a tree, and lands on her feet and starts chasing us. (Which she has been doing all year).

We don't hang around her because we don't want to get cuckoo clocks, or the giggles (Which are contagious). She and her buddies (Hannah, Kendra, Jessica, The Twins, Courtney L. and Shawna) chase us. On our side there is: Adam, Justin and Bobby F. If Kari finds out we're writing this (which she already knows), she will have us for dinner. We can't wait to see what she does because she tried to hit Bobby when he showed her the picture.

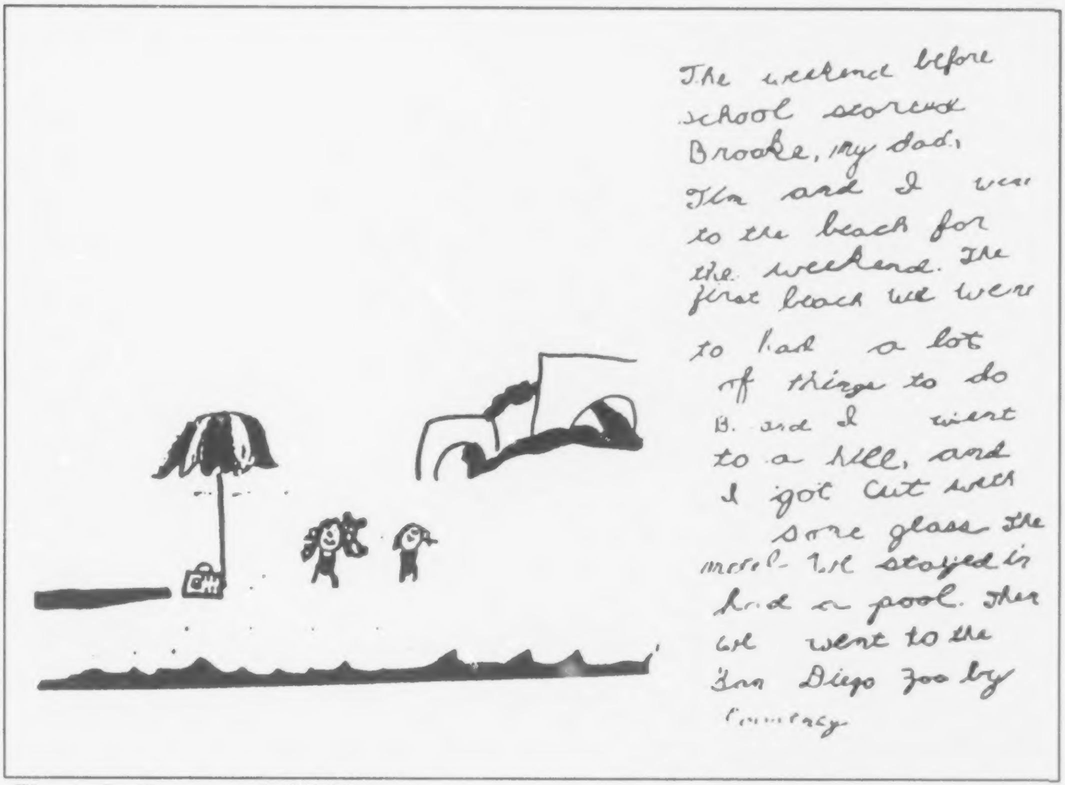
By Justin & Bobby F.

*Figure 5.* **Justin and Bobby's Computer Writing**

drawing appears to have provided an initial object for labeling as well as providing a focus or general theme upon which to write.

*1.2 Focus or general theme.* The second most frequently observed drawing function served to focus the young writer. The drawing activity provided the general theme for the writing. For example, many children would begin to draw war, a beach party, a birthday party, hearts, bugs, a rainbow, race cars, or a surfer without prior knowledge of what they would actually write. The drawing helped the children to focus, thus providing a self-initiated, meaningful context for writing.

*1.3 Re-creates an experience.* The children's drawings provided a context for writing in fourteen instances of a graphic represen-



The weekend before
school started
Brooke, my dad,
Tim and I went
to the beach for
the weekend. The
first beach we went
to had a lot
of things to do
B. and I went
to a hill, and
I got cut with
some glass the
motel we stayed in
had a pool. Then
we went to the
San Diego Zoo by
Courtney

*Figure 6.* **Courtney's Writing**

tation or re-creation of an experience. In Figure 6 an eight-year-old drew first and then wrote about her experience, relaying more detail in her words than through graphic form.

1.4 *Access to imaginary worlds.* Many children drew imaginary worlds which they then could label and for which they could list attributes or describe what happened there in writing. For example, children were observed to draw and write about such invented worlds as Diamond Land, Shrink Land, Happy Land, Color Land, and Leprechaun Land. Some children wrote about imaginary worlds or "special lands with their own ways" in which an Arab chases a witch, and Santa Claus exists together with an alien.

1.5 *Pleasurable activity.* For some children, drawing was a pleasurable activity in itself. Initially it appeared that possible drawing behaviors consisting of play with color, line and form may not be related to writing at all. However, upon further analysis, the drawing of designs, along with providing an aesthetic appeal for the children, also provided a context for writing. Sometimes the youngest children romanced their squiggles and designs into an object that they then labeled by writing "This is a ...." For the older children, designs were drawn prior to writing (See Figure 7) without intent of representing any

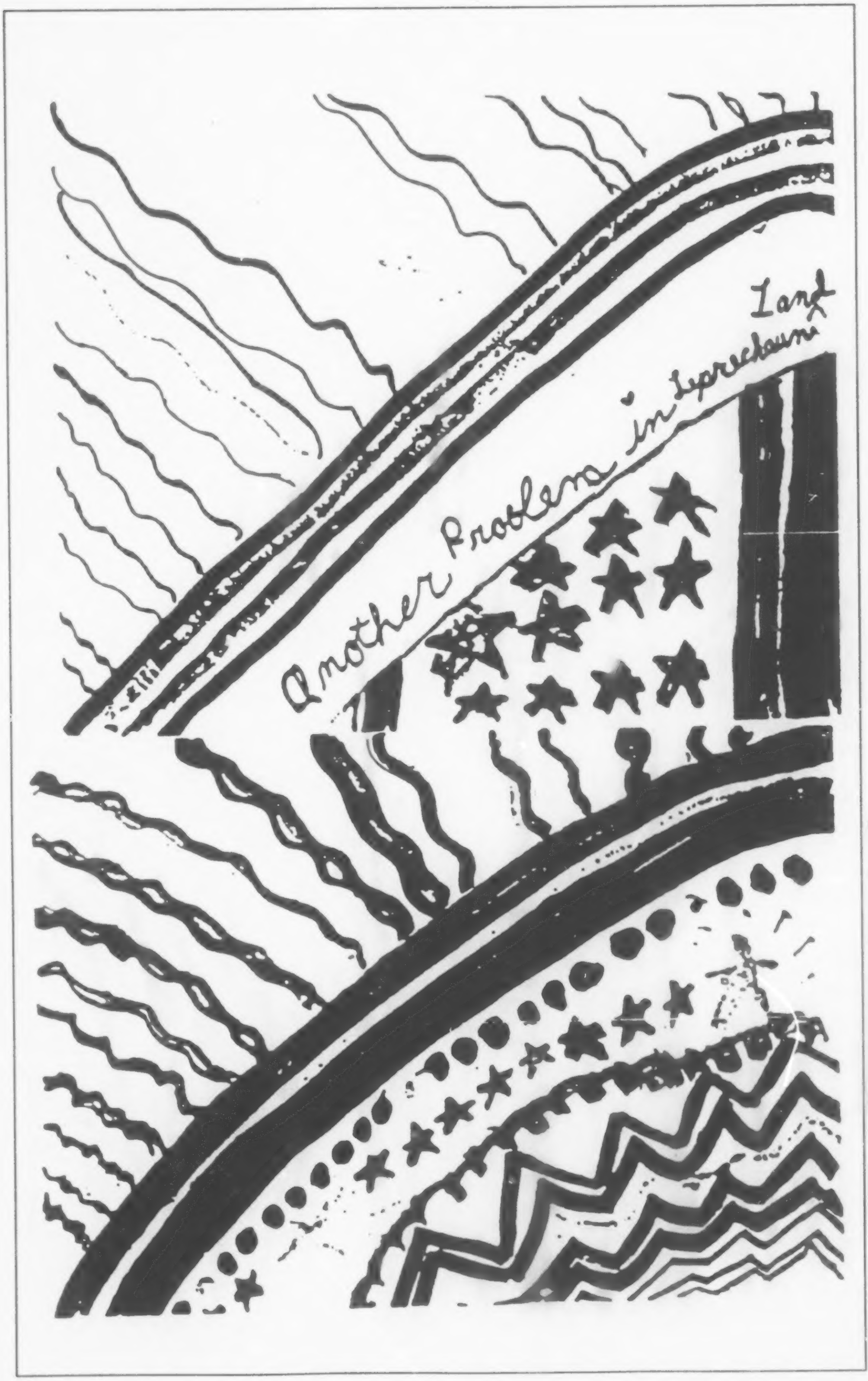

Another Problem in Leprechaun Land

*Figure 7.* **Another Problem in Leprechaun Land**

one theme or object. The manipulation of color and line were more important in initial behavior. An eight-year-old girl remarked that she did not know what she wanted to write yet, but she liked the colors and drawing with "smelly" markers (See Figure 7). She began to draw her design, pausing frequently to smell the various marking pens. She repeated zigzagging lines, dots and stars. Then she announced that she would make a book about Leprechaun Land, a sequel to a book that she had written the previous school year. It could be argued that the child's drawing provided access to an imaginary world, also. In many instances one or more drawing functions were observed in a single writing activity.

### 2.0 *The Communicative Function*

2.1 ***Clarification for self or others***. Some of the children observed drew for themselves and others. A five-and-a-half-year-old told me that she drew pictures "so they can see it." The younger children drew to show what they felt they could show better with form than with conventional symbols of print. Older children did the same, although they interpreted the text through drawing rather than supporting their message through drawing. For example, Adam, an eight-year-old, was writing a book about the human body. He was reading from a library book and writing his own version of the text. Following the format of his source, he had a chapter for major body parts. The structure and content of his writing was influenced by the library book, although he did more than simply paraphrase the published text. Upon completing his writing, he decided to draw a picture of a baseball player throwing a ball "cuz the brain controls the arm." Adam's drawing clarified the information he had just read and written. Nowhere in the library book was there a picture of this kind. The illustrations in the book were diagrams of body parts. Adam's drawing was more of an interpretation of his understanding of the information in the text.

2.2 ***Illustration***. Drawing that served to illustrate or extend the writing occurred after the writing in all but two cases. In one case, the child's drawing was an illustration of a prior writing activity. Kari, an eight-year-old, drew a picture of the Golden Gate Bridge and told me about her family's trip to San Francisco. The day before she had written about this trip in her Writing Book. In the second case, a second grade boy was making a book about world records. For each entry in his book he used the same procedure. First he thumbed through the volume of world records, looking at photographs. Then he asked an adult to read aloud the picture caption. He discussed the world record with the adult in an effort to retain the facts. He verbally announced what he was going to write word for word and then he drew his own picture to illustrate his spoken words. Last, he wrote down his words just as he had planned initially.

Drawing behavior that illustrated and extended the text occurred after the actual writing. The older children chose to use drawing for this purpose more often than the younger children. The one kindergartner who drew after writing was involved in making a book about trucks. He opened his book to the first page and wrote: "Their are many kinds of Truck's. Their are gravel truck's oil trucks and their are farm truck's."[*sic*] Then he said, "Now I draw my pictures." He drew the pictures after writing each page of text on the opposite page to illustrate what he had written on each of the five pages in his book.

Only two first grade children were observed using drawing as illustration, and, in both cases, the children were writing books about recent true life experiences. Shaun wrote about a pigeon that entered his family's home and the excitement that occurred as a result. Alison wrote a book about her grandma's pet dog, Shadow, dying and dedicated her book to her grandmother who was unhappy about the event. Alison wrote the sequence of events leading to her grandmother's dog's death, including the veterinarian's diagnosis of the cause of death--heart worms.

2.3 ***Decoration***. Occasionally children would draw after writing to decorate their piece for aesthetic purposes. Of the seven instances where this was observed, four of them involved making greeting cards for family members or friends. The children in these four cases had decided to make cards. Their purposes were clear; one child made a card for her aunt that began "For a Pregnant Mom Who Likes Kids." Upon completing their messages, these children used drawing as an extension of their writing in an effort to make their cards aesthetically pleasing. In the other three instances where drawing was decoration for the children's writing, all three children were third graders, and, in each case, they verbalized an intent to make their pieces of writing "prettier" or "more colorful" for their peers who might read their story when it was displayed in the classroom library.

### 3.0 *The Transitional Function*

3.1 ***Maintains and supports the flow of ideas***. Twenty-five observations were made in which children used drawing as a means of maintaining and supporting their efforts to write and convey a message. All twenty-five instances occurred during the process of the writing act. Most often, first graders were observed to use drawing for this purpose. Many of the children verbalized a belief that the picture and the text must be congruous. This belief that many children verbalized while being observed is noticeable in the children's writing products. Often the children added objects to their pictures to ensure congruence with their text. Other times they added words and phrases to their text to fit their pictures. The matching of picture and text, then, supported and perpetuated the writing episode. In Figure 8, a first grade boy produced writing to match his picture. He wrote: "This is World War Two. A force field is protecting...." Then he stopped to color in with a red crayon more fireballs (See Mark A on Figure 8). He made combat and explosion noises as he drew scribbles and lines (See Mark B on Figure 8). He talked to another child sitting nearby; then he drew a rectangle and asked how to spell oil (See Mark C on Figure 8). After more talking about objects in his picture, including the F15 and Voltran, he drew more oil and gasoline (See Marks D and E on Figure 8). After more sound effects and rereading his story composed thus far, the boy continued writing until he had finished his story (See Figure 9).

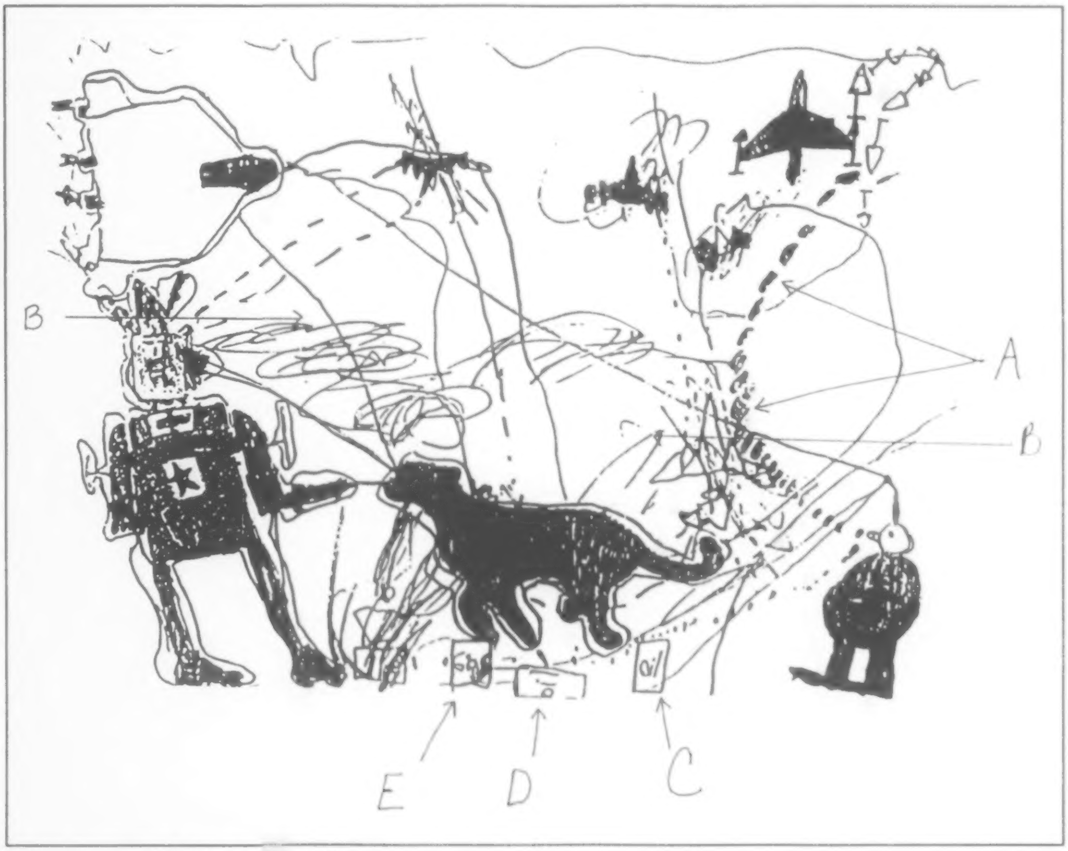
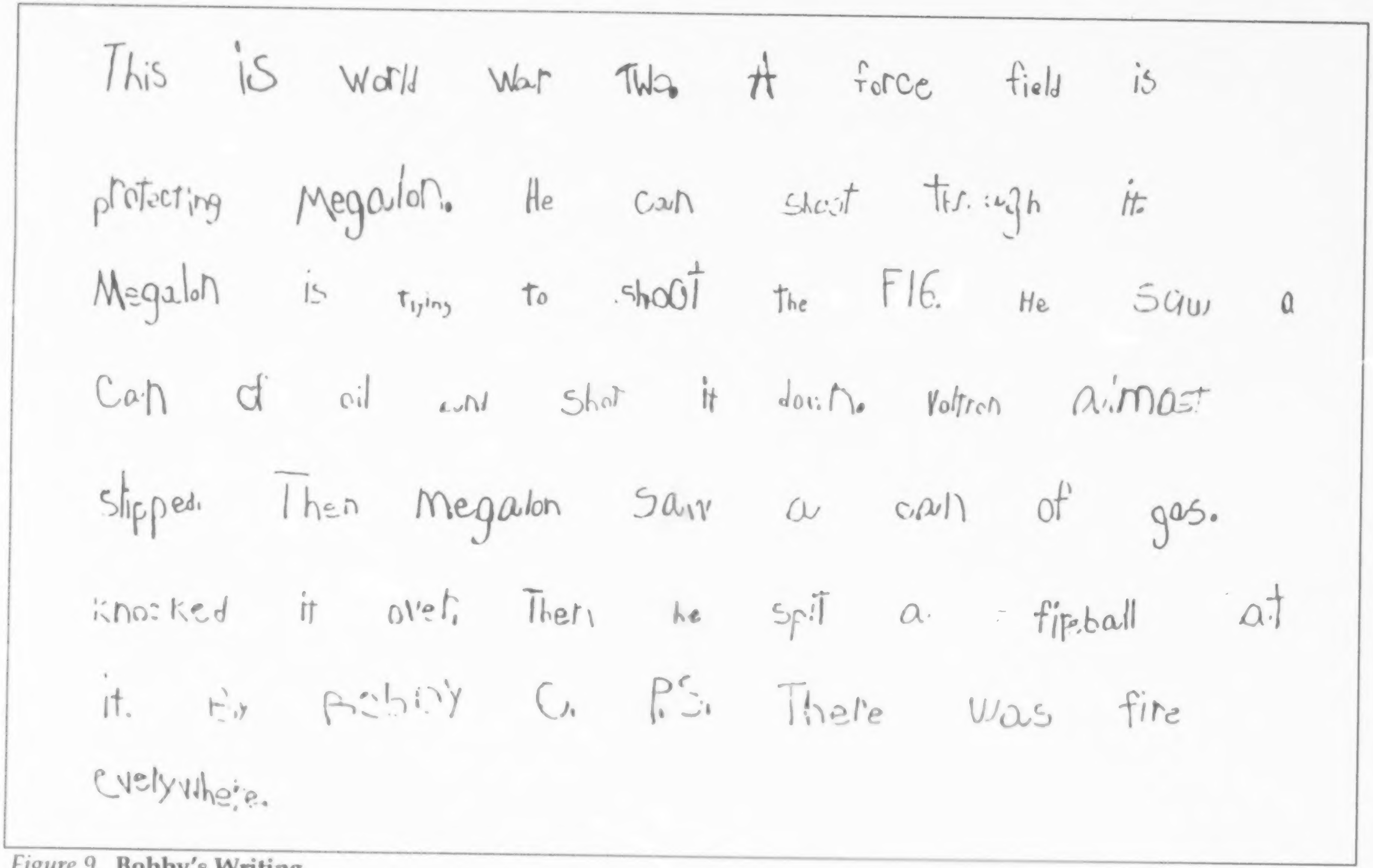


*Figure 8.* **Bobby's Drawing**

The children for which drawing served a transitional function drew during the writing process. They added objects, lines, and splotches of color for detail, for emphasis, or for securing congruence. By vacillating from the drawing to the writing and vice versa, the young writers were able to continue the flow of ideas for writing.

A pattern emerged in this category nonexistent in the other categories. Among the twenty-five observations of the transitional



This is world war Two. A force field is protecting Megalon. He can shoot through it. Megalon is trying to shoot the F16. He saw a can of oil and shot it down. Voltron almost slipped. Then Megalon saw a can of gas. knocked it over. Then he spit a fireball at it. By Bobby C. P.S. There was fire evelywhere.

*Figure 9.* **Bobby's Writing**

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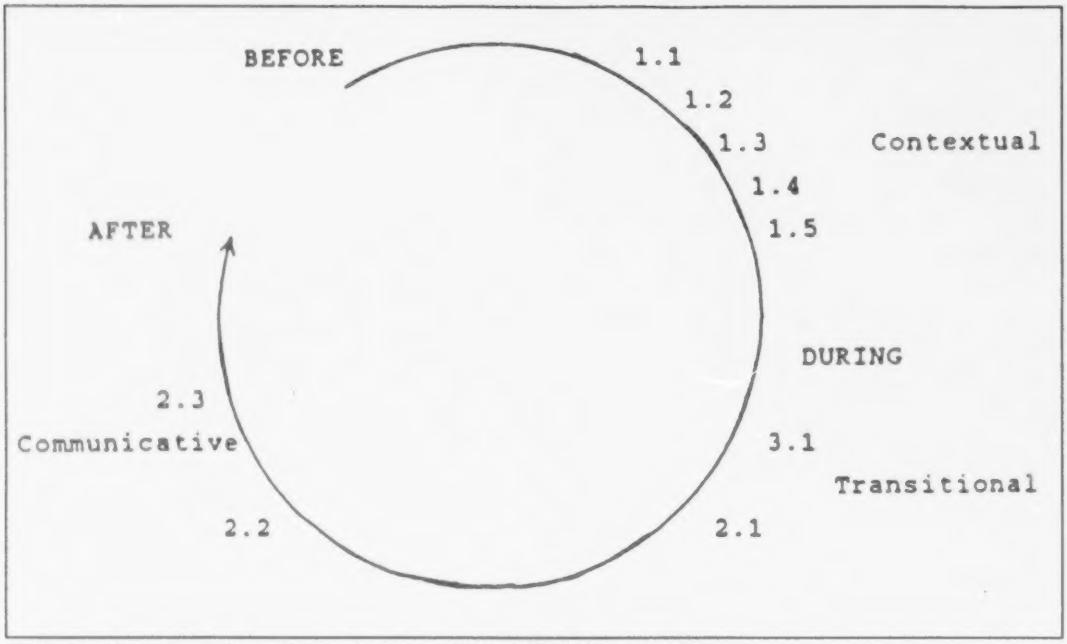

*Figure 10.* **Drawing Functions and the Writing Cycle**

function, only seven cases involved young female writers. Eighteen of these observations made were of boys utilizing drawing in this way as a keep-going strategy.

The categories described above cluster rather neatly around the time at which they are used within the writing act (See Figure 10). Drawing provides a contextual function before writing, a transitional function during the writing process, and a communicative function after writing by extending and elaborating upon writing through illustrations and decorations. The only exception is drawing that is done for clarification, which serves a communicative function, and is usually done during the writing episode.

The children's drawing behavior then served positive functions and aided significantly in their writing. In just a couple of cases, however, drawing served a negative function. There were two instances where a third grade boy and third grade girl changed their minds about what to write due to their self-perceived lack of ability to draw the scene realistically. The girl decided to write in her Writing Book to solve her dilemma, thus avoiding the necessity of drawing the picture while maintaining and preserving her desire to write about her experience. The boy simply discarded his initial theme and chose another topic on which to write. He chose a theme that he felt he could represent graphically to his satisfaction.

Other than these two cases, drawing served positive functions for most children. Further analysis revealed that drawing affected writing development in individuals and facilitated growth. These results are presented below.

### The Role of Drawing in the Writing Process

The results about the role of drawing in the writing process are presented under the following four categories: (1) How drawing affects writing development in individuals, (2) the effects of drawing functions on the number of words written, (3) the variance of drawing functions among individuals, and (4) how the role of drawing changes with the individual's growth as a writer.

#### How Drawing Affects Writing Development in Individuals

The data suggest that parallel development occurred in the individual's drawing and writing. The children's individual development centered on two basic principles of growth:

1. repetition of form
2. sequential and directive order

***Repetition of form.*** The individual children in this study were involved in problem solving activities when they drew pictures and wrote stories. They often used repetition of form in their pictures. It can be argued that the repetition of form also manifested itself in the ubiquitous labeling phrase "This is a ...." The individuals in this study used repetition as an avenue for future growth.

***Sequential and directive order.*** The individuals in this study displayed a pattern of growth that was sequential and directive. The trend observed was compatible with the orthogenetic principle (Werner & Kaplan, 1963). The individual's growth reflected a gradual tendency towards increased differentiation of the symbolic processes. The kindergartners and first graders displayed tacit knowledge that gesture, drawing, talking, and writing yield a complementary whole reflecting an undifferentiated view of the varying symbol systems.

The second and third grade children in this study displayed behavior in which their text formed an independent unit from their graphic representations, gestures, or speech. They were observed not to voice or make gestures during the writing act. In addition, third graders were the only children in this study to extend their text through illustration.

#### The Effects of the Drawing Functions on the Number of Words Written

There is not one way in which the drawing functions appeared to affect the number of words written in the children's texts. Each child utilized a combination of varying drawing functions in the production of their texts. For each individual, the number of words written gradually increased over time. The observed drawing functions changed over time also; however, no set patterns were observed in which the two elements of change were related.

### *The Variance of Drawing Functions among Individuals*

The children observed in this study employed the drawing functions differently. There was no one way or set of ways that the drawing functions were observed. Each individual child used a unique combination of the drawing functions while in the process of writing. As noted earlier, however, there were similarities observed with regard to the drawing functions and when the children drew during the writing process.

### *How the Role of Drawing Changes with the Individual's Growth as a Writer*

The data gathered among the group of sixty-seven children suggested that the role of drawing changes with the individual's growth as a writer. An analysis of the children's responses to the informal interviews revealed that drawing was helpful to them in four different ways. Drawing was perceived by the group as a whole to:

1. provide an object to label.
2. act as catalyst for generating ideas.
3. concretize abstract thought.
4. allow for reflection.

An examination of individual children within the group yielded findings that change did indeed occur with respect to the role of drawing as the individuals developed as writers. For example, although drawing primarily served a contextual function for one child, a change in that role was evident as she increasingly relied on her drawings to provide a focus or general theme rather than simply providing objects to label. A product analysis of the early drawings and writings of the third grade children in the group suggested that drawing had served a contextual function when they were kindergartners as it provided access to imaginary worlds, but, when they were third graders, they were not observed in this research study to use drawing in this way at all.

Overall patterns were observed as to the way in which the role of drawing changed in individual children. These patterns are as follows:

1. An increased reliance on drawing as providing a focus or general theme rather than simply an object to label was observed as the child grew in competence as a writer.
2. An increase in the child's age was related to a decrease in the use of drawing as providing access to imaginary worlds.
3. Drawing as pleasurable activity was especially significant for the youngest children.
4. The frequency of identification of drawing as clarification and illustration increased with chronological age.
5. Drawing as transition was especially significant for the six-year-olds and reflected their belief that the picture must match the text.

### *Summary of Findings*

The role of drawing in the writing processes of kindergarten and primary grade children is important. Drawing served three major functions and nine specific functions. A context for writing occurred when children created drawings that: resulted in objects to label, focused writing on a particular theme, re-created an event or experience, provided access to imaginary worlds, and provided pleasurable activity. Drawing served a communicative function as it clarified, illustrated, or decorated the children's writing, enhancing their message. In addition, drawing maintained and supported the flow of ideas, thus serving a transitional function. The drawing functions overlapped and occurred in various time dimensions within the writing process.

The role of drawing changed with the individual development of the young writers. Individual growth reflected a gradual tendency towards differentiation of the symbolic processes. Each child utilized a unique combination of varying drawing functions, and, although the number of words written gradually increased over time, there was no one way in which drawing affected the number of words written. Patterns in the way the role of drawing changed in individual children were observed as follows: (1) the drawing served as objects to be labeled as a child first approached writing, and with growth the drawings provided a focus or general theme for writing; (2) the drawings were unlikely to provide access to imaginary worlds as the child grew older; (3) the young emergent writer engaged in drawing behavior that was pleasurable activitiy; (4) the older child used drawing to enhance writing through clarification and illustration; and (5) the drawing behavior that served a transitional function was especially important for six-year-olds.

A number of instructional implications may be derived from this research. These implications are discussed below.

## INSTRUCTIONAL IMPLICATIONS

### *Drawing and the Writing Curriculum*

The findings of this study reveal that drawing serves an important function for children ages five to nine while engaged in the writing process. Drawing must be an integral component of the writing curriculum. These findings can enlighten teachers as to the power of drawing for young writers. Teachers must re-examine practices that require children to draw only *after* they finish writing. Clearly, it makes sense to young children to draw in conjunction with writing. Whereas the older primary grade children did engage in drawing after writing as illustration, the majority of the younger children engaged in drawing behaviors before writing, which provided a context for their writing.

Writing for the children in this study was a personal process, each child demonstrating great variability in the ways in which drawing served a vital function. Teaching practices that force children to draw and/or write on an assigned topic or "story starter" should be reexamined. As educators, teachers must adopt a broader view of learning to write that encompasses all the symbolic processes. Writing develops in young children as a complex orchestration involving a combination of gesture, speech, and drawing. Children must be allowed the opportunity to access the various symbol systems while learning to write.

### *Optimal Learning Environments*

The findings of this study suggest that optimal classroom environments are those that allow young children an opportunity to draw in conjunction with writing. Optimal learning environments allow for a rich intermingling of movement, drawing, talking and writing. Teachers should encourage natural movement, interaction, and collaboration between their students.

***A broad-based learning environment***. This study suggests that a broad-based learning environment would provide an optimal setting for children to develop as writers. Four characteristics of a learning environment that would facitilate growth include the following: (1) A broad view of writing as a symbolic activity would exist in which writing activities would be pursued in conjunction with drawing, talking, and movement. (2) Freedom of theme, message, and purpose would be preserved in the child's writing activities. (3) The invention and repetition of form (both graphic and phonetic) would be encouraged. (4) Spontaneous purposeful play in drawing and writing would be encouraged.

***Choice and self-selection.*** Choice and self-selection are two key factors that contribute to a broad-based learning environment. Children need to be able to choose their drawing and writing purposes and activities. Given choices, children can self-select drawing and writing activities that are appropriate to their needs.

The children in this study were given the opportunity to learn and grow in a supportive environment. They had an array of drawing and writing tasks from which to choose. Sometimes they chose to draw and then write; other times they chose to write without drawing depending upon their needs and purposes.

***Listening to children***. It is important to listen carefully to the children so as to respond more appropriately to their instructional needs. The following remarks were made by several children when they were asked if drawing helped them in their writing activity:

> Child 1: I have to draw the pictures 'cuz it, it gives me more ideas.
>
> Child 2: Pictures make me know more ideas.

> Child 3: When I'm drawing I kind of think of the thing that I'm drawing.
>
> Child 4: I need to look at the picture a little while and then I can write about it.

These remarks were common among the children. Although their ability to express themselves varied with age and command of the English language, the sixty-seven children in this study perceived drawing as serving an important function in the writing process.

## CONCLUSIONS

Drawing has an important role in the writing process of kindergaten-primary children. Drawing serves three major functions and nine specific functions. The use of drawing functions varies among individuals, and functions overlap within the writing process. Drawing and writing behavior should occur simultaneously in classrooms for young children. Learning environments that allow for a rich intermingling of movement, drawing, talking, and writing are optimal for kindergarten-primary children.

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# Developing Conventional Spelling: Temporary Spelling and the Transition Point

ADRIENNE L. HERRELL

This article explains the place of temporary (invented) spelling in the sequence through which children become conventional spellers. Temporary spelling contributes to auditory sequencing, which is a necessary factor in becoming a good speller. The other necessary factor is visual memory. Activities to develop these factors are presented. How to recognize when a child has reached the transition point is explained, along with procedures for a transition point conference between teacher and child and suggestions for managing an individual spelling transition program. Activities to support sound/symbol connections are suggested for children who are still working on temporary spelling.

Invented spelling has been encouraged in schools with beginning writers in order to free them to express their ideas and communicate in writing. This practice is one that concerns many parents and some teachers. It is important that parents and teachers understand the place of invented spelling in the sequence of becoming conventional spellers. It is a temporary device, and, as used in the classroom, it has never been intended to take the place of conventional spelling. The term "temporary spelling" is more descriptive and more positive and hereafter will be used in this article in place of the term "invented spelling." The purpose of this article is to explain the positive function of temporary spelling and to provide some instructional guidance for teachers working with emergent writers.

### *Stages of Invented Spelling*

Many studies have documented the sequential nature of temporary spelling (Calkins, 1986; Graves, 1983; Harste, Woodward & Burke, 1984; McGee & Richgels, 1989). Initial consonant sounds are the first heard and represented, with final and medial consonant sounds following. The child then gradually becomes aware of vowel sounds and tries to represent them in some way. Graves (1983) identified these stages of spelling development in this way:

> *Pre-alphabetic stages:* Random scribbling, controlled scribbling, circular scribbling, mock letters.
>
> *Sound/Symbol stages:* (Word represented is GRASS)

| | |
|---|---|
| *Stage One*: | Initial consonant Child writes G |
| *Stage Two*: | Final consonant is added - GS |
| *Stage Three*: | Medial consonant is added GRS |

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| | |
|---|---|
| *Stage Four:* | Vowel is used as a place holder GRES |
| *Stage Five:* | Conventional spelling - GRASS |

(pp. 184-185)

The use of temporary spelling at stages I-IV is important for two major reasons: (1) it allows the child to communicate his or her ideas in writing, and (2) it provides meaningful practice in the representation of sequences of sounds. This practice leads to the gradual mastery of auditory sequencing, which is one of the necessary factors in becoming a good speller.

## THE NECESSARY FACTORS IN BECOMING A GOOD SPELLER

### *Auditory Sequencing*

Temporary spelling helps the emergent writer to focus on one of the important factors in learning to spell--auditory sequencing. The child is practicing auditory sequencing when listening for the sounds of the word in sequence and gradually discovering which of the symbols called letters can be used to represent the sounds.

In the beginning, the child is learning that sounds can be represented by letters, and the symbols the child writes may not match the sounds heard. As the child learns the consonant sounds, the words heard are represented by the initial sound of each word or a letter that represents a dominant sound such as R for the word "are." As the child is focusing on the sequence of these sounds and the letters that represent them, auditory sequencing is constantly practiced and refined. If a traditional spelling program, with lists of words to be tested each Friday, is introduced before the child masters this use of representing sounds with letters in sequence, auditory sequencing is lost as the focus, and the child moves into a memorization mode in order to learn the assigned spelling words.

One of the most important responsibilities of the teacher of emergent writers is to observe the children carefully to see when they are using their auditory sequencing skills to represent most (or all) of the sounds in words. If the child's writing can be read phonetically, with initial, medial and final consonant sounds included and some vowels used, either correctly or as place holders, the teacher knows that the child is nearing the "transition point".

Another clue, however, is found in the second necessary factor in becoming a good speller, visual memory. Elaboration of this factor follows next.

### *Visual Memory*

During the time that children are being encouraged to write using temporary spelling, the teacher and significant others are constantly modeling the use of conventional spelling. The children are surrounded by charts, bulletin boards, books and chalkboards filled with conventional spellings. As the children dictate sentences in Language Experience lessons, the teacher is writing conventional spellings, and soon these spellings begin to appear in the children's own writings. The appearance of a number of conventional spellings within the text of a child's own writing is the second indicator that the child has reached the transition point.

### THE INDIVIDUAL NATURE OF THE TRANSITION POINT

It is important to realize that not all children in the class will reach the transition point at the same time. For this reason, the teacher must be observing the children's writing carefully, looking for signs that the child is:

1. representing most or all sounds in temporary spellings.

2. beginning to use some conventional spellings.

These children have reached the transition point, and the teacher then begins spelling transitions with these individuals. The other children in the class are encouraged to continue the use of temporary spelling while still being surrounded with conventional spelling models. (Some additional experiences which may help support the development of sound/symbol relationships and auditory sequencing will be described later.) The spelling transition begins with a student/teacher conference.

### A TRANSITION POINT CONFERENCE

When a child displays both the indicators of having reached the transition point, the teacher should sit down and confer with the child with two purposes in mind. First, the progress the child has made should be celebrated. The second purpose is to introduce the child to the steps in making the transition to conventional spelling. Elaboration of these steps follows.

1. *Identifying and celebrating the words the child already knows how to spell conventionally.* This is done by examining a sample of the child's writing and making a list of the conventional spelling used consistently throughout the sample.

2. *Identifying words (not more than three, to start) the child is using frequently in the writing sample which are close to conventional spellings.* The minor adjustments needed to make these words conventional are discussed with the child, and the words are added to the child's list of conventional spellings. The child is instructed to check this list while revising and editing to make sure all the words on this list are spelled correctly in the writing sample. This list is kept in the child's writing folder, and he or she is responsible for checking this "proofreading list".

3. *Adding words to the "proofreading list" when new writing samples are added to the child's writing folder.* These words may be entitled "Mary's Words" or something similar that indicates that the words on the list are Mary's responsibility. The child may decide that he or she wants to add more than three words each time, if the process is working well.

The following six-year-old girl's writing sample will serve to demonstrate this process. This sample was the result of a first grade lesson in which the book *The Song and Dance Man* (Ackerman, 1988) was read to a first grade class and then a discussion was held in which the children talked about special things they did with their grandparents or aunts and uncles.

> I Whant to Shchool whith her I Whant to the musamey with my grandma I like to go to the mool whith my grandma She is nice gos like you and kat I like her vare motch She taks me to sizzlre when She camse to my howse She whal lat me sho her fore sho and tale.

This child is representing most sounds in the words she writes, which, along with her use of conventional spellings, makes the writing fairly readable. After reading the piece together, the teacher begins the celebration by saying something like, "Look at all the words you already know how to spell!" The teacher and the child go through the piece together, making a list of all the conventional spellings: *I, to, her, the, my, like, go, she, is, nice, you, and.* The teacher then looks to see if there are any words the child is using regularly that approximate conventional spelling. In this case, "with" is spelled conventionally at one point and is spelled "whith" at another point. The teacher might say, "You have spelled 'with' correctly here and are very close here. I think you are ready to learn to spell that word." The teacher and the child together identify a few words that the child will become responsible for checking. These words are added to the list of conventional spellings the child has already mastered. This list is kept in the child's writing folder, and she becomes responsible for proofreading her writing for these spellings before she asks anyone else to read her writing.

It is important to remind the child not to be overly concerned with spelling and proofing during the writing of the initial drafts--ideas are still most important at that point. The focus on spelling should always remain the same: conventional spelling is important so that other people can read your writing more easily.

A variation on this approach involves using a list of high utility words and circling the words for which the child is responsible. An advantage of using such a list is that children frequently proofread for more words with the use of a list. Any high utility word list should be supplemented with words that the individual child uses frequently in writing. For example, one child who wrote frequently about horses had to add several "horse words" to her list, for example; *mane, canter, jodhpurs,* etc.

### MANAGING AN INDIVIDUAL SPELLING TRANSITION PROGRAM

The teacher must monitor student progress closely because not all children reach the transition point at the same time. Regular conferences should be a part of the writing program. These can be very brief interactions between the child and the teacher, but these interactions serve several important functions in the child's progress toward becoming an author (Dyson, 1989).

Dyson found that student-to-student interactions and student-to-teacher interactions functioned as validating experiences for the students, serving to build a social community in the classroom. The students in her studies actively supported one another in writing and spelling as they talked among themselves during the writing process. The students worked collaboratively and helped each other solve problems they encountered in their writing and spelling. The discussions among the students and the teacher validated the students as authors in charge of their own writing and established a community of learners.

The conference process can become automatic if conferring about writing is built into the classroom routine. Some strategies for establing this routine include:

- scheduling children on a rotating basis, some on each day of the week so that the teacher confers with each child once a week or once every two weeks.
- having children sign up for conferences as they complete a first draft.
- using before and after school, recess and lunch time appointments for children to spend focused one on one time in conference with the teacher.
- having the children all prepare for brief conferences and then the teacher confers with each child during the period.

These conferences not only enable the teacher to monitor individual progress but they also inform the teacher as to needed related activities and/or direct instruction for groups of children. Instructional strategies, in order to be effective, must be based on the children's individual skill levels.

### ADDITIONAL ACTIVITIES TO SUPPORT SOUND/SYMBOL CONNECTIONS

The children who are still working on temporary spelling and sound/symbol relationships may need additional activities to help them make these connections. The logical first place to start is with the child's own name (McGee & Richgels, 1989). Cubbies, desks and belongings should be labeled with the child's name. Activities such as taking roll and dismissing children to learning centers can be accomplished using name cards, which help the children focus on the sound/symbol relationships in their names. For example, at the end of circle time the teacher can dismiss children to centers by holding up one name card at a time. Focusing on the initial sounds at this time helps the children make connections. For example, if, after holding up the card "Jack," Jamie and Jack both stand up, the teacher should acknowledge the reason for the confusion by saying, "Yes, Jamie, your name starts just like Jack's. J-J-J for Jack and J-J-J for Jamie."

The use of non-writing materials to help build sound/symbol relationships can be fun and instructional. Magnetic letters used on the side of a filing cabinet can give children practice in building words in a non-stressful way. Using pictures of familiar items or animals and building the words with magnetic letters helps the children listen for the sounds and represent the sounds with letters without having to actually form the letters each time. Play dough, finger paint, and liquid glue sprinkled with glitter or confetti are all good materials for practice in forming letters.

Teacher modeling of conventional spellings and sound/symbol relationships are a very important part of this program of temporary to transition to conventional spelling. By sounding out the words as they are written on the chalkboard and eliciting the help of the children in spelling familiar words, the teacher provides a model of sound/symbol relationships. As the teacher calls attention to frequently used words on class charts, the visual memory of those words is added to the repertoire of the children's conventional spelling.

Other resources to support children's transition to conventional spellings should be a part of the classroom environment. An alphabetical list of the children's names can be the beginning of a class dictionary that can be supplemented as children learn new words. This class dictionary or "word wall" can be displayed on a bulletin board in the classroom. The words generated by a topic of study can be written on cards, displayed in a pocket chart, and then kept on rings that are available to the children as they write. The children should all be actively involved in adding new words to the class dictionary or word wall.

## DIRECT INSTRUCTION

There are certain techniques of direct instruction that are helpful in making children aware of patterns in our language. In using these techniques, it is very important to keep them in perspective. The foremost rule is that lessons should be short and functional.

If a child wants to know how to spell a word that follows a pattern, teach the word in relation to the pattern. For example, a child is struggling with writing "hen". Say, "Oh that word is like 'ten', you just change the /t/ to /h/." Instead of presenting the children with ditto

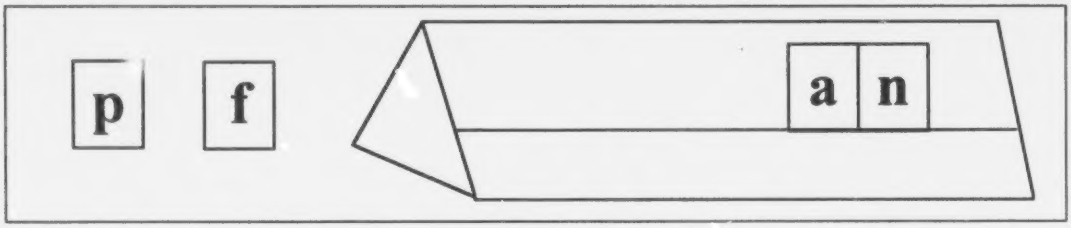

*Figure 1.* **Example of Show-Me Letter Cards**

drill on families of words like ten and hen, set up a learning center where they can make family word books. The instructions might be, "Take a little word like 'an' and see how many words you can build." The children can then take the base word and see how many different words they can build by simply changing the initial sound. Be sure to model the process for the children before asking them to do it independently.

Direct instruction is most appropriately done with individual children or in small groups of children who, as the teacher knows by having observed their writing, are ready to learn a technique or strategy. The strategy should be presented with an explanation of how it will make writing easier, and the children should be given a chance to use the strategy in relation to their own writing--not in a drill and practice mode. For example, children who are having trouble seeing the relationship between word family words (*an, can, fan, man, pan, ran, tan*) should be gathered together in a small group. The children are given show-me cards and small letter cards (See Figure 1). Begin by helping the children build the word "an". The teacher then gives clues such as "I am thinking of a word for something that you use to keep yourself cool. Sometimes it is on the ceiling and sometimes it sits on a shelf. It has blades that go round and round and move the air to cool you off. You only have to add one letter to the word in your show-me card." The children then add the letter "f" to the word "an" to build the word "fan." The teacher may then say, "Now I want you to change only one letter to make a word that means something your mother uses to cook food." The children change the "f" to a "p" to make the new word. Because the children are building the words, the teacher can monitor each child's responses and determine which children need more support in learning to sequence sounds in word families.

After the children have practiced building words, they go back to their own writing and are asked to find any "an" words they have used. The children report any "an" words they used by building a chart or list, which helps them remember to focus on that particular word family as they reread their own writing.

The most important part of direct instruction in small groups is being aware of the needs of the children. Children who are already freely using word families to help them spell unknown words do not have to spend time practicing something they are already using easily. The teacher has to be aware of what the children can do in order to convene a group that will benefit from a particular instruction at a particular time. Those children who are still struggling with beginning sounds would probably not benefit from a lesson on word families. Without careful observation and monitoring of progress, the teacher will be subjecting the children to frustration or unproductive use of their time.

An exciting extension of language experience lessons and a natural support for the child moving into conventional spelling is the Interactive Writing Lesson (Button, Johnson & Furgerson, 1996). In an Interactive Writing Lesson, the children begin to "share the pen". A sentence is negotiated among the children who experienced an activity. For example, if the activity was baking a birthday cake, the children might begin with the sentence, "We made a cake". The teacher uses her fingers to demonstrate that the sentence consists of four words. She points to a finger at a time as she says, "We made a cake. We have four words in this sentence. What is the first word?" After the children reply "we", the teacher has them stretch the word - W-W-W - E-E-E. She then invites a child to come to the chart or chalkboard and write the word "We". As she hands the pen or chalk to the volunteer, she asks, "What kind of a 'w' will you make?" The point of this question is, of course, to focus on the word as the first in the sentence and needing a capital letter. The teacher and the children work their way through the sentence, taking turns writing the words in conventional spelling. The volunteers are supported in sounding out the words. If the words do not follow the phonetic rules, the teacher simply says, "This is one of those rule breakers," and spells the part of the word needed for the child who holds the pen. Conventions of print are taught as the sentences are written, and, if the child makes a mistake, correction tape is used to cover the mistake and it is corrected. This activity is a direct teaching activity that encourages children to use their knowledge of words, rules and phonics to move into conventional spelling with the support of the teacher and other children who are also ready to make the transition (Button, Johnson & Furgerson, 1996).

## CONCLUSION

No matter where the child is functioning in emergent writing the focus should always be on communication. If the child is just beginning to write initial letters to represent sounds, the teacher should enthusiastically celebrate the *D* written to represent the dog drawn. As the child progresses, each subsequent addition of strategies and skills should be noted and celebrated. The teacher should always focus on all the new things the child is learning but in relation to writing as communication. For example, one first grade class had just returned from a field trip to a local hospital. The children were drawing pictures and writing about what they had seen. One child had drawn a picture and written DKTR. The teacher went to the chalkboard and wrote DKTR. She said, "Look what Jonathan saw at the hospital!" The children read, "Doctor!" The teacher said, "Is that the way your mother and dad would spell 'doctor'?" The children all chorused, "NO!" The teacher reminded them, "We can read it, and we'll all learn to spell it like grown-ups when we get bigger. But, we know what Jonathan saw at the hospital. We can read what he wrote!"

This teacher is celebrating Jonathan's ability to communicate in writing. She is aware that children move through stages in learning to read and write. She is confident that Jonathan will make the transition into conventional spelling when he masters sound/symbol relationships and is supported in learning the rules of conventional spelling. To help him progress through these stages, she is modeling conventional spelling throughout the day every time she writes on a chart or chalkboard. Her room is full of charts and big books that give Jonathan and all his classmates resources for learning conventional spelling. She is observing the children carefully as they practice reading and writing, and she is planning activities daily that support the children's progress in auditory sequencing, visual memory, and communication in writing.

It is easy to talk about focusing on communication and ideas, but children will not learn to communicate and share ideas in writing unless they are given the tools with which to communicate those ideas. For many children a barrier to this communication can be spelling. Understanding the role of temporary spelling, celebrating children's written communications and growing knowledge of sound/symbol relationships, and knowing what to do to help children make the transition to conventional spelling give teachers the tools to support children as they grow into competent written communicators.

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# Zoology in the Early Childhood Curriculum

SAUNDRA PLETT

This article details the progress of a zoology program in a Montessori class of 20 children, 3 to 6 years of age. The teacher's diary begins with planning in July and continues through the first two months of school. Described are content and learning experiences about vertebrates and invertebrates. Guiding the program are theoretical principles regarding instruction and learning.

Gregory burst in through the door this morning, grabbed my shoulders and said, "My mom lost the frog in the trunk, Sandy, come quick!" He had the kind or urgency in his voice that just can't be put off, so I left my little chair by the door and followed him out to the parking lot. His mother was standing by the open trunk, a 10 gallon bucket in her hand, pointing and hollering, "It's in there! It's in there!" During the drive the bucket had tipped and the toad (it was not a frog) had gotten loose in the cavernous trunk of their big American sedan. Greg was, by this time, frantically hopping up and down with worry, so I did what any teacher would have done. I kicked off my shoes, climbed in the trunk, and chased the toad until it wedged itself in by the spare tire and I caught it. As I held it up a chorus of little voices cheered -- the kids had followed me outside!

Later we took the toad with us to the backyard to watch it hop on the grass. Instead of hopping, it crawled! Instead of croaking, it chirped! "I wonder what else we don't know about it," mused Kyle. Only a real toad could elicit that kind of reflective thinking.

## THE FOCUS OF A ZOOLOGY PROGRAM

What follows is a diary of classroom zoology activities recorded during the first few weeks of the school year. In my Montessori class of 20 students ranging in age from 3 to 6 years, zoology is only a part of what we do at school. The daily activities available to the children range from practical life (snack preparation, table scrubbing, silver polishing), to art (drawing, painting, free form projects), to academics (wide range literacy activities and hands-on mathematics). The schedule of the school day is very loose. We meet for grouptime, work in unstructured free choice for the bulk of the time, play outside for awhile, hear a story, then go home. Our zoology activities take place alongside everything else at working time and at grouptime, extending, of course, to the out-of-doors and into stories.

I am relating a few of our classroom stories to bring out several ideas important to any early childhood zoology program. The first idea concerns the role of the teacher as learner. Maria Montessori spoke eloquently on this topic in many of

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her writings, encouraging us always to experiment and research as we seek to serve the best interests of our students. We need not be masters of the sciences, but we must develop the scientific spirit, awakening in ourselves an interest in natural phenomena (Montessori, 1964). Opening ourselves to the wonders of the animal kingdom will not only enrich us personally, but also will enable us to respond more sensitively to the interests of the children.

A second idea expressed in the stories is the importance of the teacher's respect and love for animals as an indicator of her own values and as a model for the children. The National Association for the Advancement of Humane Education underscores this notion in its curriculum guides, as Savesky and Malcarne (1981) stated:

> Children trained to extend justice, kindness, and mercy to animals become more just, kind, and considerate in their relationships with each other. ...the cultivation of the spirit of kindness to animals is but the starting point toward that larger humanity which includes one's fellow of every race and clime... (p. *ii*)

The next idea is absolutely essential to the lasting success of a zoology program. The program must be spontaneous, building on and keeping pace with the interests of the children. Following the child in this case means sparking an interest in zoology then running to keep up with what happens next. Ready-made classroom materials such as picture cards, classifying games, books, etc. are all fine and good, but it is much more valuable to provide encouragement for children's contributions to the study by providing containers, shelf space, letters home to parents and a welcoming attitude. Jim Roberts (1976) assured us that if you support the efforts of the children to bring in animals, if you encourage careful investigation, observation, and sharing of information with the group, the children will know that you think both they and their studies really count, and you will be supplied with an unending stream of animals to study.

A fourth idea is that the spontaneous study experiences can and should merge beautifully with teacher designed lessons and preprogrammed objectives. The National Association for the Education of Young Children (NAEYC) (1991) document concerning guidelines for curriculum and assessment speaks at length on this point. We can add to this wisdom by understanding that the secret of merging spontaneous activity with teacher determined goals requires creativity and planning regarding the nature of activities provided. Do they provide real work for the hands, accurate information for the mind, quality of reflection, beauty, or orderly progression for the spirit? The second requirement is a large dose of intuition. The dance between facilitating self-development and leading toward an external goal demands timing. The kids should learn that all insects have six legs, but the teacher must determine the optimal moment for that to happen.

In her exuberant style, Montessori spoke of this balancing act. The task of the teacher, she said, is to stimulate life then leave it free to develop. She further stated (Montessori, 1964, p. 155): "In such a delicate task, a great art must suggest the moment, and limit the intervention...that we shall help the soul which is coming to the fullness of life...this art must accompany the scientific method"

### *Planning in July*

The NAEYC policy statement describes a cycle of learning which moves from AWARENESS to EXPLORATION, INQUIRY and finally UTILIZATION. Following these guidelines allows us to tune in to natural cycles of learning as we plan the curriculum. I am doing some planning now for our zoology study for the upcoming school year, knowing that adventures await us.

Last spring, for example, I stretched my knowledge and experience with snakes, although this was not in my plans. One morning the father of a student found a six-foot gopher snake in his field, placed it in a large aquarium, and brought it to class. The excitement that erupted upon the snake's arrival soon turned into an enthusiastic desire to know more about this particular snake as well as other snakes.

We called for a class meeting with a double purpose: to discover what we as a class already knew about snakes and to voice what we would like to learn. As I talked with the children, I took careful notes. The notes would help me plan lessons, and they would also serve to let the children know that what they were telling me was important.

That evening, I reviewed those notes and developed some ideas about how to approach the study of this wonderful creature. By developing classroom activities that expanded upon the children's existing knowledge and explored their unanswered questions, I enabled them to absorb much information concerning snakes. The children also practiced and expanded their skills in many subject areas, including mathematics and language arts.

But the best lesson by far came the day we made the snake mad. We did not mean to make it angry and indeed tried desperately not to do so, but we did and neither the children nor I will ever forget it. There had been considerable discussion about what its scales felt like, and after some persistent begging, I agreed to pick up the snake so the children could run their fingers over its body. I had held snakes before, even some type of giant python during a field trip with my own daughter's 4th grade class. But I was reluctant to deal with a gopher snake. They are nasty tempered beasts with an equally nasty bite, not at all like the docile little rosy boas that the zoomobile lady brings around.

I gathered the children in a circle, placing the aquarium in the center. Anticipation of opening the cage settled us all into a profound stillness. We spoke quietly of the need to handle the creature carefully, not only because it was wild and would bite but also because we were more powerful than it and so were obligated to treat it gently. I was honest. I told the children that, although I was afraid, I was certain that I could keep them safe.

The stillness settled more deeply as I removed the screened lid. At the end opposite the head I slowly moved my hand into the aquarium and touched the middle of the snake's body. It reacted by moving that part of itself away from my hand. I touched again, and gently again, searching for a predictable response before I ventured closer to its head. When I did move closer the snake would lift several inches of its front end slightly off the floor of the cage and bend itself around threateningly. I do believe that all human breathing was suspended. Some children were slack-jawed as they stared. After a few more attempts, I knew my nerve was giving out. How could I save the lesson? Deborah, my assistant, suggested that perhaps I could lift a section of its back end have the children touch that, keeping its head safely down in the cage. Remembering then that I had done that very thing with the enormous python, I decided to try it. Waiting until the snake had slithered into a likely position, I carefully yet firmly grasped it near the tail and began to lift.

It was not the noise I reacted to, but the violent pull of the animal's body. The rush of adrenaline actually made me dizzy, eliminating any knowledge of movement. I only noticed that my hand was out and the lid was on the cage. The snake was rapidly coiling, its head was moving back and forth in a way that any living creature would find menacing, and out of its open mouth came a hissing, steaming, malevolent sound. Through the pounding in my ears I heard Michael whisper, "I think that was a mistake, Sandy."

For the next two hours we watched the gopher snake pump its lungs in and out, producing that constant awful sound. The waving head and coiled body were joined by a rattling tail, as it characteristically tried to imitate a rattlesnake. It was convincing performance! No one knows how long it stayed agitated. It was finally time for us to go home.

The foregoing description certainly was an example of the first step in the cycle of learning - awareness, but it also included exploration, the second step. After various activities of inquiry, the children formed conclusions about snakes and utilized generalizations in several forms that demonstrated their new knowledge.

Whatever planning that teachers do must leave open opportunities for learning adventures. I did so as I planned in July for the first day of school in September.

### *September 18*

The first day of school. The returning students enter confidently, happy to see old buddies and the familiar classroom; new children are the usual mix -- some clinging to mom, some bouncing right in. But nobody can resist a peek into the large plastic, pink box on the table. Out of it comes a strange sound, "like Nintendo!" says T.L.

I did not say a word about it except that the box was full of crickets. Some children were startled, most were fascinated, Tyler said "It's disgusting." Several of the children began to hop around attempting that chirpy cricket sound. A little later children related a few cricket experiences. Gregory said he always hears them in the night. Emily said her mother is scared of them so she better not come to school to visit.

We read Eric Carle's *The Very Quiet Cricket* before we went home. Immediately the children asked me to read it again. What a happy group they were as they left today. School has started with something none of them would have expected.

*September 19*

The singing of the crickets is such a pleasant backdrop to all of our activities. As we go about our work the children often stop to check on the insects. Today there are more questions -- What do they eat? Why do they sing? (Kyle says so that way we know it's evening). Why do some have long things poking out and some don't? Do they bite? Still nobody tries to play with them.

I want the children, especially the new ones, to feel comfortable asking questions and using me and their classmates as a source of information. To this end we sit in our circle, and I invite the children to say something or ask something about the crickets. In the course of the discussion we learn, among other things, that crickets are jumping insects, that they sing at night, and that they do so by rubbing their wings together. Most of the information I want the children to have is brought out, but much more importantly they have heard that their questions are intelligent and their observations appreciated.

If I were to simply provide them with the cricket information rather than encouraging them to discover it and then share with each other, I would run the risk of disconnecting the children from primary, first-hand observation. At times even the best of teachers tend to organize information too quickly, so that the constructs take the place of nature in reality (Sillick, 1988). Names, labels and information are most meaningful if they describe the child's experience. The children need time simply to observe and gain a feel for what they are observing. First they must know the crickets by listening and watching them hopping about and chirping. Only then is language useful in calling to consciousness what they have taught themselves or come to wonder about.

*September 20*

Today we decorated plastic food tubs for cricket boxes so each child could take a few crickets home. We have spoken of the importance of letting our crickets out in our yards at twilight. The children accepted this and talked about where the crickets will live. Sierra wants hers to live close to her bedroom windows. Emily will put hers in the front yard, away from the dog.

The nurturing of humane treatment of animals is a high priority for us. Research has concluded that humane treatment can be learned in the earliest years of life and that this may be the crucial period (Blue, 1986). Because I am so convinced of this, I was surprised and disappointed that the California State Science Framework failed to address this concept as appropriate for young children in their studies of living things. The Framework limits the discussion of interaction of humans and other life to aspects of food and clothing. What a loss to the spirit of the child and the future of our society if we do not view our work in terms other than utilitarian!

### *September* 24

A few days ago Vanessa's mom called to offer me a baby squirrel. She had actually seen this baby fall from an oak tree into a pile of leaves and lay there, helpless. The only thing she could think to do was protect it from the cats and call a veterinarian. The family fed the squirrel with an eyedropper until it graduated to fruit and nuts. It was not ready to live on its own, but no longer needed around the clock care. Of course I said we would take it. Only at the end of our first day with Wiggles did he begin to feel comfortable with us. His flips and circles were much more interesting than the story about a squirrel, so we watched him instead.

### *September* 26

Zachary walked in the door this morning with a big jar containing a praying mantis. "Look Sandy! It's like the Grouchy Ladybug!" He was referring to the story we read yesterday by Eric Carle in which a grouchy ladybug encounters a variety of animals. John observed that *The Very Quiet Cricket* (Carle, 1990) also had a praying mantis. I suggested that the two boys find the pages with the praying mantis to compare them with the real creature. Exuberant Zachary hooted with delight at the realism of the artwork, but meticulous John carefully compared feature after feature before quietly commenting, "The real one has to be in a jar but he doesn't like it." The two boys decided to show each classmate the insect and the pictures, then let the praying mantis go in the flower garden. How amazed they were when it flew away.

### *September* 27

Wiggles is getting much friendlier, allowing us to pet him and even crawling onto my arm. Part of his care involves cracking nuts for him, so in our Practical Life area we have two nut cracking exercises. One is cracking peanuts with our fingers, the other is using what is called a Quackenbush nutcracker to crack walnuts. Some nuts are cracked for the children to eat, some for Wiggles. He is a very well-fed squirrel.

Dr. Montessori offered some insights as to what experiences such as the daily care and playtime with animals have to offer the developing child. She felt it was absolutely necessary to place the soul of the child in contact with creation so that he or she may learn directly from nature as a means to develop the intellectual, spiritual, and moral domains (Montessori, 1964). By acting out our role as Wiggles' surrogate parents, we are moving through many of the stages Montessori suggested. The children are learning to observe life, slowly increasing in their ability to care for Wiggles by feeding and watering him and cleaning his cage. They are developing foresight through their observations, anticipating Wiggle's needs without reminders from adults. An initiation into patience and confident expectation is gained as we watch Wiggles grow in size and strength, anticipating the day he will be able to crack his own nuts.

*October 1*

In preparation for our upcoming Pet Show, we made a chart of all the pets we have at home and how many of each there are among us. It is a way to spark a little interest in numbers, especially for T.L. He seems afraid of numbers, as though someone has been pushing him to learn what he is not ready to learn. He enjoyed this activity and referred to the chart several times today, counting and naming numerals.

Extending one course of study into other areas of learning adds an integrated and whole feeling to the curriculum, and I like to do it whenever it seems natural and reasonable to do so. But I do feel that we can take an integrated curriculum too far and stretch it beyond credibility. I am thinking now of our Wiggles. How much squirrel math can you do? I mean really? Do we put the squirrel away when we have exhausted his potential for language study? My feeling is that we learn about the squirrel, integrate ideas when they are a natural outgrowth, and pursue other areas of learning separately.

*October 2*

The other day I sent out a call for a tomato hornworm. My own tomato plants at home are miraculously devoid of these pests this year, but I wanted one as another class pet. Mark brought in a huge one, as big as my index finger, still clinging to a clipping from a tomato vine. We watched this fellow munch blossoms for a few days, then we prepared for his first step toward change by filling a gallon jar half full of dirt and placing him on top. Because I had told the children a story about the life of a tomato worm, they knew what to expect and were not surprised when he began to dig. By the end of the day he was settled at the bottom edge of the jar with a little pocket of space around him. Now he will change from a larvae into a pupa and sleep the long winter away. For months we will have what appears to be nothing more than a jar of dirt on our observation shelf--a lesson in waiting and change.

I value the symbolism in this lesson, especially for the older children. There is something in them that senses a commonality with the caterpillar. Something is changing for them also - a slow, inner change into age 6. This will be the end of Piaget's preoperational stage of development, the end of the age of Montessori's absorbent mind, the age when Christopher Robin was about to do some changing he could not explain, asking, "You will understand, won't you, Pooh?"

### *October 7*

Both John and Kayla brought their hamsters to school today. Many children remember our class hamster, Sugar, who died last spring, and they were really happy to have these little visitors. Animals are, of course, great teachers concerning the cycles of life and death. Because most of my students are in my class for 2 or 3 years, they have the opportunity to observe this cycle in our small mammals who live only for a short time. Death of a pet is painful, but sensitivity in walking through the loss with the children will help them when they experience losses later in life (Blue, 1986). Elizabeth actually became teary-eyed as she reminded me how little Sugar liked to eat one raisin everyday.

We have become very attached to Wiggles. He spends a lot of time on my shoulder or uses my whole body for climbing practice. Unfortunately, I cannot allow him to crawl on the children because his claws are terribly sharp. Wiggles does like kids to pet him and, of course, feed him. He has learned to crack peanuts already.

### *October 8*

We have had an amazing variety of animal life enter our classroom during this first three weeks of school, including a black widow spider and a skink. Up to this point our focus has been simply the particular specimens available to us. Now I feel we are ready to begin to organize our knowledge and experience. The idea is to spark interest and build knowledge through direct experience and only then to organize the knowledge into categories and classifications. If the timing is right, the new mental constructs fall right into place, almost as if the children were remembering something that they already knew.

The most basic division in the animal kingdom is that of vertebrates and invertebrates. These children know how to sort out the animals around them according to several qualities, and now we are seeking to add the insight of the big zoological picture. The development of descriptive language in science processes is emphasized in the California State Science Framework, and there is no reason why the vocabulary should be scaled down. Sensitivity to language is so high during these years that the children truly enjoy the length and the unfamiliar sound of these words. They love to impress friends and family with their scientific vocabulary. Somehow it seems to elicit a response from adults that the child is doing something important (why do so many adults need to be startled into this realization?).

At grouptime I introduced the discussion of vertebrates by having us feel various bones in our bodies, paying special attention to the backbone. After a good amount of horseplay, I wondered aloud what other animals might have backbones. Tyler asked a key question: "Sandy, if an animal has other bones, then does it have a backbone, too?" That bit of four-year old deductive reasoning set the conversation on fire, for everyone knew something that had bones. Now it was easy to introduce the word "vertebrate." We looked through a book about skeletons together, observing skeletal structures of different animals, sometimes guessing about whether or not an animal had bones before I would show the picture. When we came to a part of the book which pictured invertebrate animals, I introduced that term. I was pleased with how quickly the group seemed to gain an understanding, kind of an intuitive feel, for the classifications, even if they sometimes confused the terms. The game lasted far longer than was reasonable to expect, yet the children pleaded to continue. When Mark left this afternoon he suddenly turned back, ran up the stairs and said, "Hey! My mom is a vertebrate!"

### *October 9*

Activities involving miniatures, in this case small plastic animals, are always popular, so I was not surprised to see the clamor for the vertebrate/invertebrate classification game. In the basket are two appropriately labeled cards color coded to match the bulletin board display, and along with them are small scale animals of the type displayed on the board plus a few others. Of course we had lots of playing with the figures both before and after any sorting was done, but it was Kevin and T.L. who got into a rather heated discussion about which animal belonged in which category and what did vertebrate mean anyway -- bones or no bones? All on their own they figured out that vertebrate meant it has bones because a snake has bones and it was on the vertebrate side of the bulletin board (they knew it said "vertebrate" because it started with a "v"). But how do you figure out what a snail is? Travis offered, "I stepped on a snail once and it was real squishy so I guess it's an invertebrate."

### *October 14*

Elizabeth's dad, Tim, has an extensive collection of fossils and asked if he could share them with the children. Although his explanations were frequently beyond their understanding, they enjoyed repeating names like ammonite, copralite, trilobite. At one point John asked if a trilobite was a vertebrate or an invertebrate. Before Tim could answer I broke in and simply asked John what he thought. "Well," he said, and then he paused because John thinks long and hard before he speaks, "Well, he's showing us lots of shells and stuff that I know are invertebrate but the trilobite has lots of lines that look like bones." A noisy discussion followed until at last William suggested that we needed to see a picture of a trilobite. To our great good fortune we had a book in class that gave us what we wanted, and the children immediately concluded that a trilobite is an invertebrate. How did they know that?

Our science shelf is by now a jumble of collected small creatures, a bird's nest, assorted rocks and shells, flowers, the first yellow leaves of autumn and a magnifying glass when we can find it. Again, I resonate with Roberts (1976) in that I could never have come up with such an interesting variety myself, and even if I had, the objects would be mine instead of belonging to the children. Right now the stuff resembles a kind of life science rubbish heap. No doubt some tidy soul will ask to organize it one day and that will be soon enough.

### *October* 21

Natalie arrived with tears in her eyes, a wood spider in a jar, and an exasperated mother with a story to tell. As it happened, the evening before there were two wood spiders crawling on her parents' bedroom wall. Nat ran for a jar, and dad ran for the bug spray. Because Natalie was faster she got back to the bedroom first and caught one of the spiders, but dad was close behind and got the other. When he sprayed they were all surprised by the dispersion of dozens of tiny spiders -- the mom had been carrying them on her back! An orgy of spraying followed and all the spiders, save the one in the jar, were killed. "Sandy", Natalie cried, "We could have studied them and let them go!" Mom said she had no idea that her daughter would react so strongly, and the whole family was miserable.

Several times during the afternoon Natalie remarked about how sad she was that all those babies were dead. She turned her spider loose in a tree and watched it crawl for awhile, pondering these things in her heart. I wonder if Nat will catch spiders or spray them when she is the mom and it is her wall.

### *October* 22

Gregory's mom called me last night to report that their family had captured a parrot that was loose in the yard. They now had it in a cage and were trying to locate its owner -- would we like to have it for the day?

I decided to do a little comparing and contrasting of the parrot and Wiggles. We placed Wiggles' cage in the middle of our circle and set the parrot cage on top of that, providing everyone with a good view of both animals. I said, "I wonder what things are different about these animals?" Immediate responses included things like one has fur and one has feathers, one has four legs and one has two, one has a beak and one does not. "How about things that are the same?" I prodded. This was harder. Finally we noticed things like they both have eyes, they both have claws, and they are both vertebrates. Somebody said they both have lots of colors, but this was met with protest. Wiggles was just brown, ran the argument. Upon further inspection it was observed that Wiggles does have many colors, but they are all "sort of brown."

I want to encourage the children to become keen observers, to really see what they are looking at, and then to be able to discuss their observations. I concur again with the science framework in believing that these are the optimal years for studying the characteristics of living things. I lead the discussion in the end, with an eye toward our future study of the classifications of vertebrates. With this in mind, I wondered aloud how mama squirrels and mama parrots had babies and how they fed their babies. The children knew about live birth and eggs, but were not so sure about the feeding. The groundwork has been laid for our investigation of mammals.

### *October* 25

This is the day we all knew would come. We knew that squirrels belong in trees, not cages. We knew that Wiggles would grow strong enough to crack walnuts, and he did. We were his guardians, not his keepers. It was time to set Wiggles free.

Our backyard at school is a wonderful place for squirrels with many trees that form squirrel highways. Almond, walnut, and pecan trees provide an abundance of food, making life comfortable for the established squirrels. But would Wiggles know what to do? He had not had climbing practice except for climbing on me -- would he get around all right? He seemed undisturbed when cats would visit his cage -- would he be wary of these enemies? Where would he sleep? Would he find water?

We took him out to the backyard and opened the lid of his cage. He slowly crawled out but did not jump off of the cage. He had been in the backyard before, watching us as we played and, we hoped, getting used to the sights, sounds, and smells. The humane society lady said he would undoubtedly scamper for the nearest tree and be off before we knew what had happened, but this was not to be so. He simply sat and seemed bewildered.

After a time I moved close to him and he jumped to my shoulder. Someone suggested that we just play in the backyard as usual while Wiggles got used to being out. Several of the children dashed off to swings and the sandbox, but most decided to stay close to keep an eye on his progress.

We walked, with the squirrel on my shoulder, to the almond tree, I picked him up and set him on a branch. He immediately jumped back to me! This back and forth game continued for awhile, and all the time the children were encouraging him to climb. They really wanted him to be independent and free. Eventually he stayed on the branch, but many minutes passed before he was brave enough to climb a bit. Now all the children gathered solemnly around the tree to witness Wiggles' first climb. Slowly he made his way to the top and began to nibble at the bark.

That is how we left him that afternoon. Scared, still, nibbling on a tree. The children went home bubbling with the news that Wiggles was now a tree squirrel, but I hardly slept that night, especially after it began to rain.

### *October* 29

Christina lives out in the foothills which means, among other things, that she encounters a few critters that the city kids do not. Today she brought me one as a Halloween present -- a tarantula!

Almost everyone knew that it was a tarantula, and everyone was afraid of it. I assured the children that the spider was not venomous but that its bite was quite painful. Nobody objected to letting the tarantula crawl on the floor as long as I stayed close with a coffee can to catch it.

As we watched the spider move about, a change in attitude -- my own and that of the children -- became almost tangible. Whatever it was that we expected, it was not the light and delicate lifting of legs, or the grace of using all of those legs at once. As the tarantula explored the rug, it was transformed in our minds from a monster to a creature from an unknown land. Faces relaxed and the lights in our eyes changed from fear to wonder, just by watching all those legs rise and fall in a flow of movement. For the moment, silence was all that was wanted. We needed no talk of habitats or body parts or diet, we just wanted to see those legs carry their owner across the rug. The value of knowledge is not only in assimilation of facts, but also in the change wrought in the knower (Sillick, 1988). The spider had become our own.

### *November 1*

Wiggles came to visit! We were in the backyard picking pomegranates when John noticed him on the fence behind us. He edged a little closer, but it was clear he would not come close enough to be touched. After the children stopped shouting in excitement, I called to him, and he responded by looking at me and straining toward me, although his feet remained planted. Did I catch a look in his eye? Somehow it felt very much like the Velveteen Rabbit coming back to visit the little boy. He was free, he was fine, and he seemed to remember. Elizabeth said, "We all miss you, Wiggles. We love you!" and I began to cry.

## LOOKING AHEAD

We have had only seven weeks of school but have come so far in our zoology study. The children are finding creatures everywhere, observing them intelligently, making comparisons, recognizing distinguishing features, and feeling like the natural world is a knowable and delightful place. By watching my students closely, observing their reactions, listening to the process of their thinking and the nature of their questions, I know what kind of progress is being made. Their stories provide the content for assessment and are recorded in their individual folders, in newsletters and in chats with parents. With this type of content area, where so much of what really matters is in the affective domain or involves process over content, the real test for success is in the sparkle in the eye. I am humbled and thankful when parents tell me how excited their children are to come to school.

Zoology study with a group of young children is a mess. The classroom gets strewn with cedar shavings from the hamster cage, there is never enough space for all the bugs that are brought in, a nervous, visiting pet will urinate on the rug, someone is going to be bitten or scratched by one critter or another, and it is always a scramble to figure out who is going to care for which animals on weekends and holidays. And this is how it should be. A mouse neatly contained on a shelf has little resemblance to the interesting being it really is. It is better to let it out and have a few adventures. The only real way to know an earthworm is to get in the mud and dig around with it.

Connecting children to the world of animals requires a graciousness of spirit beyond the trip to the zoo or maintaining an aquarium. This graciousness must be willing to work with messes and inconveniences and to actually embrace them, realizing that the far reaching good of a zoology program is worth every late afternoon trip to the pet supply store, every lizard lost behind the shelves.

As the year progresses we will study classifications of vertebrates, a few of the classifications of invertebrates, animal habitats, animal babies, and many specific animals as suggested by the interest of the children. In the springtime we will branch out from the work of the house pet and the backyard environment and visit the zoo. Zachary has already told me that he wants to study giraffes. "They're so tall," he said, "that they can see the whole world."

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# Kindergarten Education: Theory, Research, and Practice

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# Kindergarten Education: Theory, Research, and Practice

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# Reading and Language; Piaget's Symbolic Function and the Foundation of Reading (Part 2)

JEANETTE MCCARTHY GALLAGHER

This is the second article in a series on Piaget's symbolic function as the foundation of reading. Language is the focus—with a special emphasis upon Ferreiro's developmental approach to reading, an assimilative base model including the importance of prior relationships influencing emerging literacy, and the use of themes for concept and vocabulary development.

> Anders...pointed to the A on the Safeway bag and said, "That's me." [Children] may represent what they have heard and understood from the community as 4-year-old Sara did when she looked at Milk (points to M)...that's how you make *mother*, but I know that's milk. (Goodman, 1988, p.12)

Anders and Sara are coping with the world of symbols. The incidents focus on the emerging awareness of relations among letters, sounds, words, expressive speech, images, and imitation in a playful environment. Anders and Sara lead us back to the foundation of reading, which is Piaget's symbolic function. Recall that the symbolic function is a system which forms gradually in early childhood to represent the world. Aspects of the symbolic function include language (oral, written and print), pretend play, imagery and drawing (Gallagher, 1986, 1996).

In this series on Piaget's symbolic function as the foundation of reading, the present focus will be on language, specifically those aspects which are developmentally appropriate at the kindergarten level. In addition, as noted in the previous article, a model letter to parents is presented at the end of this article to foster communication on selection of activities in the kindergarten classroom.

Travel with me to a school in a nearby university town. The kindergarten children we will visit come from homes with a wide range of economic levels and language backgrounds. Many of the children whose parents are professors are coping with English as a second language.

We are introduced to Elaine Toscano's kindergarten class. The children glance up, smile and quickly return to their activity. The children are seated in a large open space in front of a chart on an easel. With great excitement they are talking about the signs of spring they had noticed on their nature walk. Elaine helps the children form sen-

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tences about their observations. The children discuss their findings with each other and tell what objects and events they want listed on the chart. When they are finished Elaine asks the children to search on the chart for familiar words such as trees, buds, grass, leaves, and birds. A few minutes are used to find similar beginning and ending sounds and to search for words that rhyme. Next the children draw and label (sometimes with Elaine's help) favorite objects seen on the walk.

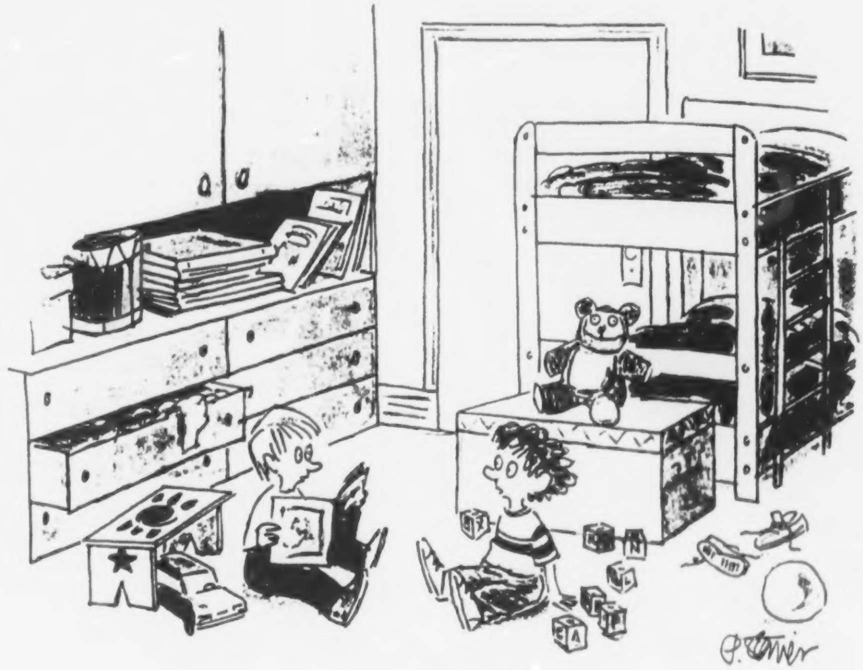
A quick survey of this kindergarten room revealed tree branches with buds at various stages, dead branches found on the ground, and moss-covered rocks. The building blocks are scuffed, the easel for painting is splattered, and the children's clothing is wrinkled and smudged. There is much evidence of creative learning activity within an informal setting. Here we see children engaged in aspects of the symbolic function stimulated by developmentally appropriate activities.

California kindergarten teachers are trained to make certain that their classroom activities are developmentally appropriate. (See, for example, California Kindergarten Association's Position Paper *Teaching Reading in the Kindergarten,* 1996.) In many parts of the country, however, the hot-housing movement which pressures children to read and write early is still prevalent. Such pressure is caught in this Peter Steiner cartoon from the New Yorker (Dec. 23 & 30, 1996). (See page 3.)

Parents often view curriculum choices through the lenses of *Sesame Street* with its heavy emphasis upon the alphabet. The memorizing and copying of letters therefore seems to them to be the logical basis for kindergarten instruction (Mates & Strommen, 1996). Avoiding pressure from parents toward inappropriate activities requires that the teacher's purposes be communicated to them.

The emphasis upon memorizing and copying letters is rooted in an approach which dissects the reading process into its smallest components. This approach was refueled in recent years by the information processing models developed in psychological circles. This conceptual framework which began in the 1960's takes the position, as stated by Gordon (1989):

> that both computers and living organisms can be viewed as information processing systems. In other words, both computers and living organisms begin by acquiring information from the environment in the form of stimulus inputs. Next, they convert these inputs into a format or code that can be used by their respective systems. The next step is to store coded information in the memory system in a particular file or location. Later, when the information is needed, the file containing it is retrieved and the information is used. (p. 196)



*"I'm still pre-literate."*

Drawing by P. Steiner; © 1996, The New Yorker Magazine, Inc.

Note that the input (stimuli)-- throughput (storage) -- output (retrieval when needed) movement is from outer to inner. This information processing approach has been broadly used in research on reading leading to major contributions. However, some problems emerge. It is difficult to study the same children from kindergarten to third grade. The kindergarten populations consist of children who are readers, non-readers and those in between. Selection of research tasks becomes problematic (McGuinnes, McGuinnes, & Donohue, 1995). Another problem is associated with a breaking down of the process of reading into its smallest components which is antithetical to the concept of literacy *development* (Ferreiro & Teberosky, 1982).

Until the 1980s early childhood teachers had little theoretical or research assistance in understanding children's difficulties in moving from a spoken language to a printed language. First applications of Piaget's theory to understanding reading revolved around the misconception that reading and the ability to conserve and seriate were intertwined (reviewed in Gallagher, 1979 and Miller-Jones & Gallagher, 1983). With the new emphasis upon emerging literacy, Piaget's theory is now viewed as a rich source for understanding the process of reading.

## FERREIRO'S DEVELOPMENT APPROACH TO READING

> One must reject all assumptions basic to behaviorist and empiricist learning theories to accept the affirmation that progress in literacy does not come about through advances in deciphering and copying. This position is not only based on a redefinition of reading and writing but also on a global conception of the learning process. Piaget's theory of cognitive development allows us to understand the processes of appropriating knowledge involved in learning to read and write. We refer to this learning as appropriation of knowledge, and not as the acquisition of a skill. As in any other domain of cognitive activity, appropriation is an active process of reconstruction carried out by knowing subjects. Knowledge is not truly appropriated until its means of production has been understood, until it has been internally reconstructed. (Ferreiro & Teberosky, 1982, pp. 278-279)

The needed developmental approach to understanding reading was sparked by the work of Ferreiro and her coworkers (Ferreiro, 1984, 1985, 1986; Ferreiro & Teberosky, 1982). Most early childhood teachers are familiar with the concepts of emerging literacy first researched systematically by Ferreiro and expanded by others (Teale & Sulzby, 1986). What is to be emphasized here in relation to Piaget's symbolic function is the child's construction of the meaning of print.

Note in the above quotation from Ferreiro & Teberosky (1982) that progress in literacy is not tied to such skills as copying letters. Progress is an "active process of reconstruction." The child is working with a symbol system which needs to be slowly enriched by meaningful activities.

Ferreiro used well-crafted probing and questioning techniques (following the lead of Piaget and Inhelder's method of critical exploration) that revealed the changes in the child's conceptualization of the reading process from ages 4 to 7. When reading this research, it is impossible to think of reading and writing as a patchwork of isolated skills (word perception, letter sound correspondences, sight-word analysis, input-output, etc.). Instead, the reader observes a continually developing process of print awareness and differentiation.

### *Early Stages in the Concept of Print*

In exploring the child's concept of print, Ferreiro documented a developmental sequence in the child's beliefs about the symbol system of print. Initially, the child views print and pictures as unitary--different forms possessing the same meaning. Later, print is viewed as a label of pictures, but with no necessity for correspondence between the words said and the number of words in print. As the child puzzles about this, she concludes that each graphic unit must be named. The next conceptualization is that the child believes there must be a one-to-one correspondence between the graphic units and the sound segments. The child may break the name of the picture into syllables and attribute a syllable to each word (the syllabic hypothesis). The binding concept in these four stages is the belief on the part of the child that the meaning of the print can be predicted from the pictures.

Consider some adapted examples to highlight aspects of the Ferreiro and Teberosky research (1982). Children were shown cards on each of which was a picture and label of a familiar object like a ball, bear, boat, flower or duck. The researcher's directions are indicated below by "R" and the child's response is indicated by "C".

Example 1 (p. 57): Alejandro (4 years). The child is shown a boat with a label "boat."

R. Is there something to read?
C. Yes (Points to word "boat").
R. Where does it say boat?
C. (Points to picture of boat).
R. It says boat in the picture?
C. Yes.

Here is a clear example that the text to be read is not differentiated from the picture. Consider a more advanced example.

Example 2 (p. 66): Valeria (4 years). Shown a duck with the sentence: "The duck is in the water."

R. What do you think it says?
C. A chick.
R. Where?
C. (Points to all of text.)
R. Or could it say, "the duck is in the water?"
C. No. Just duck.

This is an interesting example of a child who considers print to be a label for the picture but is able to differentiate "text to be read" from "picture to be seen."

Examples like these can be used to explain to parents that kindergarten children, especially in the first part of the year, need many hours of storytelling during which the teacher and the parent direct attention to pictures which illustrate the events described in the text (Adams, 1990). One of the crucial foundations of reading is this holistic approach provided by rich language experiences at story time.

### *The Alphabetic Principle*

The alphabetic principle does not emerge until the child begins to puzzle over the inadequacy of the syllabic hypothesis. Once this awareness is gained, the child begins to use the properties of the text (i.e., segmentation of words, length of text, and letters) as cues to predict what words are represented. At this point the child has developed the belief that the text and oral reading, two sets of symbols, should match.

This description of the child's changing belief system regarding print evolves through a series of constructs about the "world" (i.e., print). The ability to cope with print, therefore, is a gradual construction from the child's own experiences including the instruction she has received. We will return to this construction of the concept of print in a broader setting in the next section and also in the last section on the importance of a theme approach to curriculum planning.

### DEVELOPMENTALLY APPROPRIATE CURRICULUM: AN ASSIMILATIVE BASE MODEL

> When we were children we could have learned so much about children!...Now I will never be able to talk with them as I could when I was a child....You can't disguise yourself as a child and mingle in with them or go back to being a child....You *can* try to win their confidence and get them to talk; they want to if you will give them a chance and treat them right. (Kost, 1987, p. 152)

Kost (1987) captures the wistfulness of a 20-year-old man who tries to capture the marvelous conversations of childhood. She elaborates:

> The constant play of images, ideas, and words which characterizes the child's *talk* is a medium and a message in itself. The secret of being admitted into these marvelous conversations seems "childishly" simple: too simple for most of us who have reached our full height. (p. 152)

Children have their own experiential base. In Piagetian terminology, they construct new understandings related to that base in interaction with objects, other children and adults. As adults we may have notions as to what we want a certain child to know. Of critical importance is to ascertain what the child already knows so we can build on that foundation.

In the last section, it was made clear in the research of Ferreiro that careful interviews revealed what the children knew about print, that is, the foundations of the concept of print. In the jargon of psychologists using an information processing model, that foundation would be called a knowledge base. Such a term tends to be related to a view of learning that is additive, a piling up of skills or knowledge that is stored for later use. The preferred term, and one that highlights the interactive nature of Piaget's theory, is that of an assimilative base.

Figure 1 is a model constructed to depict an interactive classroom (Gallagher, 1986; Gallagher & Wansart, 1991). Assimilative base connotes an active network of relationships rather than a set of acquired concepts or information. In the Piagetian sense, construction, that is, the forming of new relationships, is always occurring.

The assimilative base interacts with the tasks in a school setting through three different avenues. On the left is depicted the necessity for automatic-skill development. Children need to acquire skills such as the naming and printing of letters to the point of automaticity so they are freed to enjoy reading and writing. However, when learning to read is viewed as an emerging phenomenon, then such skill acquisition is not the starting point.

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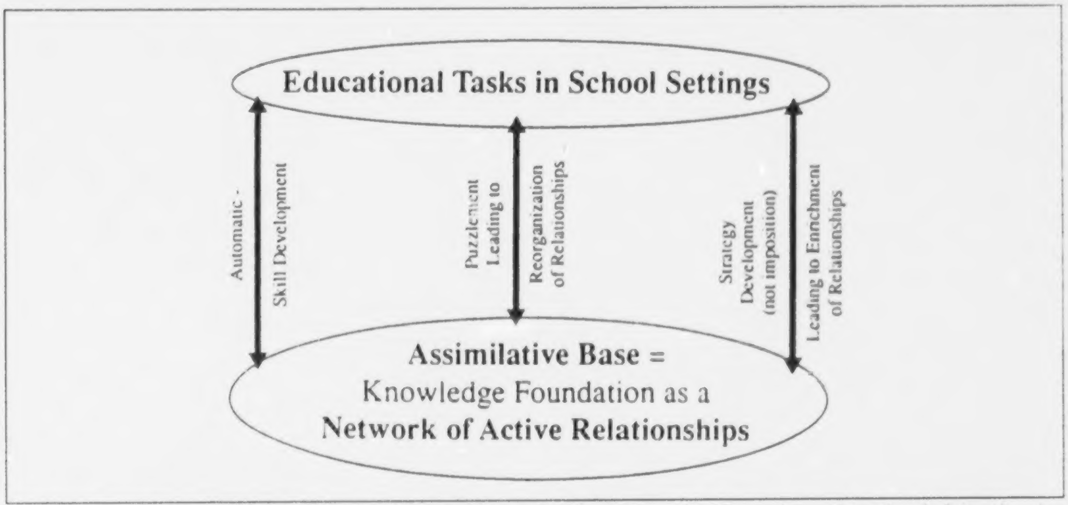
Educational Tasks in School Settings
Automatic - Skill Development
Puzzlement Leading to Reorganization of Relationships
Strategy Development (not imposition) Leading to Enrichment of Relationships
Assimilative Base =
Knowledge Foundation as a
Network of Active Relationships

*Figure 1.* **The interplay of assimilative base (subject) and educational tasks (object): A Piagetian process perspective.**

On the right is depicted the use of strategies which the child has constructed (often with the help of a teacher and other children) to assist her in reaching goals. In the research of Ferreiro, the steps in reaching the goal of the concept of print may be thought of as various strategies the child tests. Note that these strategies are constructed and not imposed. For example, since the concept of print has to emerge, it cannot be viewed as input from the outside to be stored within. Instruction and materials may be of great assistance for the understanding of print, but for real meaning the child has to do the constructing.

The middle avenue of "puzzlement" or disturbance is the heart of Piaget's theory (Piaget, 1975; 1980). Children learn by noting contradictions in what they had previously believed. Recall the puzzlements in the steps leading to the concept of print. For a time, the child perceived a one-to-one correspondence to the word "ball" and the picture of a ball. When that did not suffice, the child began to use the word "ball" as a label.

These puzzlement encounters will flourish in an interactive classroom where children have large spaces providing freedom to move from one activity to another. Other children may pose problems that encourage puzzlement. This will occur if children are free to approach their peers.

Another aspect of the importance of an assimilative base is related to the choice of activities which are developmentally appropriate. For example, the new emphasis on phonemic awareness, that is the child's realization that words are made up of phonemes or sounds, has several components. One of these is phonemic segmentation or "the ability to isolate individual sounds in syllables" (Snider, 1995, p. 444). The importance of phonemic segmentation relative to progress in reading is well documented (Liberman, Rubin, Duques & Carlisle, 1985; Wagner & Torgensen, 1987). Recently, training studies to improve phonemic segmentation in children with learning disabilities (Merzenich et al., 1996; Tallal et al., 1996) was highlighted in the popular press and has lead to questionable curriculum practices at the kindergarten level.

The basis for the training studies was an offshoot of the neural circuit studies of the cerebral cortex of monkeys (Abeles, 1991; deCharms & Merzenich, 1996). Techniques were developed to record accurately both the firing and time of nerve cells. These studies opened the door to a new understanding of children with language problems such as poor readers; they have difficulty in processing rapidly changing sensory inputs in ongoing speech. Differences in some speech sounds are measured in milliseconds, so phonemic awareness, and especially phonemic segmentation, is difficult for these children.

The training studies consisted of the use of sophisticated equipment to slow down and then gradually accelerate speech. The training improved language comprehension abilities in most of these children. They were able to hear the separate sounds of a word which is essential for the correspondence between oral language and phonemic awareness in print. Such research opens new doors for children with learning disabilities, especially in the area of learning to read.

Is it possible to jump from these research results to curriculum practices involving drill in phoneme segmentation? In other words, if good readers at the first or second grade levels are proficient in phonemic segmentation, can it be assumed that it should be "taught" in kindergarten?

A careful research study by Vandervelden & Siegel (1995) revealed that kindergarten children are quite adept at hearing the initial and final consonants of words. However, they find it very difficult to segment the medial vowel (the middle sound) even after training. First-grade children are five times better than kindergarten children at segmenting the medial vowel--evidence that the processing abilities of kindergarten children are quite different from first-grade children. So "exercises" in sounding out words very slowly to promote phonemic segmentation are perhaps quite meaningless for children at the kindergarten level. Tasks such as playing with rhymes (focusing on medial sounds) or making a game of finding words that begin and end the same would be more developmentally appropriate. Such games need to be based on a meaningful context and often related to a theme (see below). Finally, in a future article on reading and writing an emphasis will be placed on writing as a vehicle for phoneme awareness.

In sum, the key to selecting appropriate activities revolves around the assimilative base, the network of understanding. What are the children capable of doing? How will these activities be meaningful for these children?

## THEMES AND THE FOUNDATION OF READING

> "My mother doesn't have no more birthdays," Fredrick [age four] tells me in school one day.
>
> "Do you mean she doesn't have a birthday party?"
>
> "No. She really doesn't have a birthday. How I know is no one comes to her birthday and also she doesn't make the cake....when it's her birthday they forget when her birthday comes and when her birthday comes they forget how old she is because they never put on any candles. So how can we say how she is old?" (Gussin Playe, 1988; p. 3)

Recall the concept of assimilative base, which is a set of related understandings that a child brings to a learning situation. Here we see Fredrick in a state of puzzlement in reference to the meaning of a birthday. For him the meaning of birthday is deeply associated with a party, cake and candles. How old one is is inseparable from the number of candles on the cake. Therefore, the logical conclusion; no candles means no way of knowing the age of the person. Later in the dialogue Fredrick reveals that his grandmother is deceased so he will *never* know how old his mother really is!

In an information processing model what Fredrick has constructed is a schema for the meaning of "birthday." A schema is "a general knowledge structure used for understanding" (Medin & Ross, 1992, p. 346). Note that such a definition is not far from what we have labeled as an assimilative base. The preference for the term assimilative base is its emphasis upon the building up of relationships due to interactions between the child's understandings and experiences both within and outside of the classroom.

What is important here is to realize that, with new understandings due to states of puzzlement, the child is constantly constructing more complex relationships. Fredrick will soon realize that age is not directly related to the counting of candles but is related to the passage of time.

Nelson (1985), a leading researcher on the child's development of concepts, uses the term schema in an active sense of forming relationships. However, she distances herself from Piaget's use of schema (later scheme) by stressing that Piaget was concerned about the individual's activity. A careful reading of Piaget, however, reveals that he is really concerned about the formation of relationships for both physical and mental activities. If an infant has formed the scheme of reaching, then that action becomes related to the complex task of retrieving a toy by pulling a blanket (Piaget, 1963). The infant has constructed the relationships among reaching, pulling and retrieving. Likewise, in early childhood the relationships among spoken language, pictures, and print lead to the schema of "reading".

### *Themes and the Assimilative Base*

Instead of the construction of a schema, I prefer to use the term "theme" as the basis for curriculum planning at the kindergarten level. In the area of discourse, a theme is a starting point for discussion. Another more powerful use of theme is from its use in music. A theme is a melody in a composition upon which the variations are formed. Just so, the teacher proposes a melody and the children interact with the teacher to construct the variations. (Note the powerful example of a theme of woodland animals in Faul, 1996).

A teacher needs to set a balance between careful planning and the freedom to move in new directions keeping the "melody" in mind.
Piaget (in Evans, 1973) clearly strikes this balance:

> It is important that teachers present children with materials and situations and occasions that allow them to move forward. It is not a matter of just allowing children to do anything. It is a matter of presenting to the children situations which offer new problems, problems that follow on from one another. You need a mixture of direction and freedom. (p. 53)

Let us take a brief look at an example of this mixture of direction and freedom using the theme of "water". Note that in Figure 2 the theme branches out to possible variations.

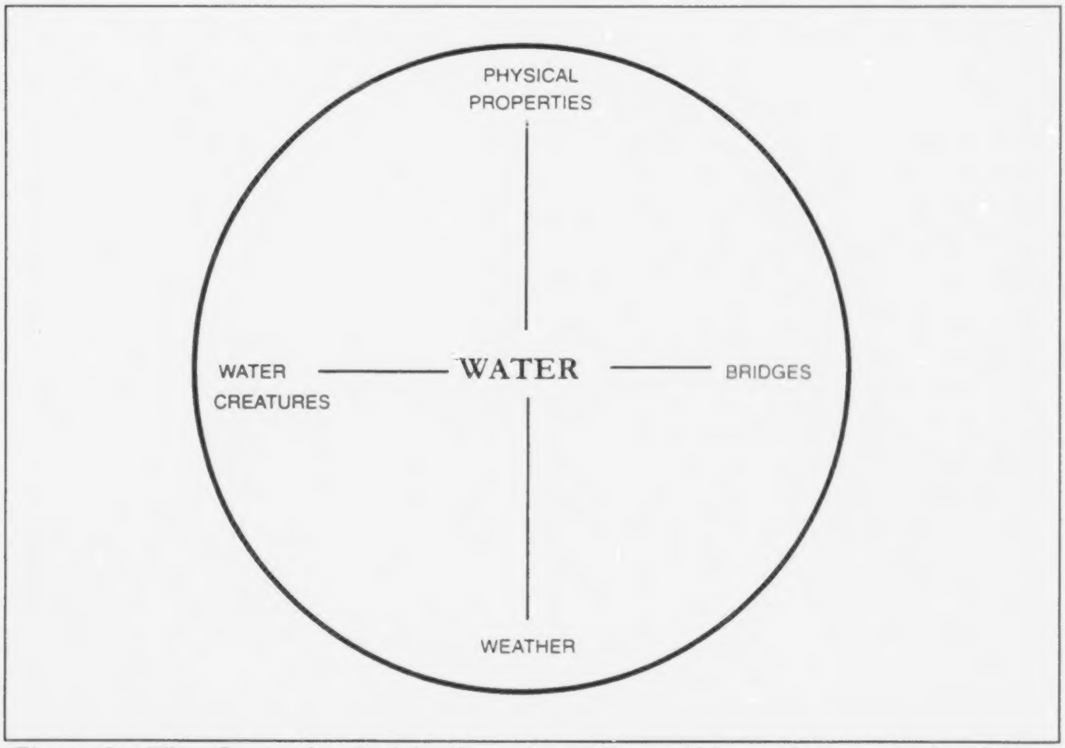

*Figure* 2. **The theme (melody) of water and possible variations to be determined by interactions between the teacher and children.**

The number of subvariations is too large to count, and the time required to explore them fully is measureless. For example, suppose the children become very involved in types and uses of bridges. Help can be enlisted from parents involved with bridges in such activities as construction, maintenance or toll collecting. Discussion of a "fishing" variation may lead to a project having some of the children go on a fishing excursion with parents. If exploration of variations like these becomes prolonged, the "weather" variation on the melody may have to be put off until next month. Direction and freedom can thus be balanced and both rigid overplanning and helter-skelter underplanning can be avoided.

Recall that a key aim of this approach is enriching the assimilative base through the use of many aspects of the symbol system of language: oral, written, print, and pictorial. First, the teacher needs to find out what the children already know about bridges. A fact chart can be constructed using simple words and phrases. Next the teacher can propose tasks that place the children in states of puzzlement. She may ask the children on a weekend to look for actual or pictorial bridges that do not span water. If a child finds an actual bridge, she may draw the bridge or take a picture. Gradually the bulletin board becomes a focus for the children's construction of the subtheme of bridges. The teacher is prepared to have pictures of unusual bridges to display (such as the covered bridges of Madison County, Iowa or Bucks County, Pennsylvania!)

Gradually a vocabulary develops and charts are formed.

Bridges may be made of:
wood
steel
concrete
bricks
stone

Bridges may be over:
lakes
streams
roads
sidewalks

There are key aims to theme building:

- To enrich the assimilative base by forming new relationships
- To build a simple vocabulary for sight reading
- To provide opportunities for phoneme awareness by frequent repetition of words and the search for related sounds
- To provide experience with a familiar vocabulary that may be used to label the children's drawings (either by the child or the teacher)
- To enhance the child's understanding of the interrelationships among spoken vocabulary, pictures and drawing, printed words, reading and writing
- To build the child's self-esteem by praising contributions to the theme
- To engage the participation of parents in theme building by en-

couraging them to plan projects through interactions with all or some of the children

## CONCLUSION

It is not surprising that the activities we encountered in Elaine Toscano's kindergarten classroom are supported by current developmental theory and research. The foundations of reading find their life in the construction of themes. Language activities blossom through storytelling, rhyming and singing, chart making, relating stories to pictures and attempts at writing about drawings (to be explored in another article). With this enrichment of the assimilative base, the correspondences between letters and sounds will be facilitated.

In this context, the old debate between phonics and whole-word approaches to reading seems ancient history. We have arrived at a very Piagetian middle-ground approach with an assimilative base of acquired interrelationships of meaningful words and concepts interacting with language activities. These activities are constructed from themes suggested by the teacher and variations suggested by the children. When classroom activities are appropriate to the child's developmental level, the interactions flow in a natural way.

The following letter is provided as assistance in communicating with parents. The focus is on why certain activities are selected at the kindergarten level. Of course, modifications are to be made according to the interests of the children and the teacher.

Dear Parents,

We are starting a new theme next month on the topic of "Water." I would like to share with you some of the activities the children and I will be planning and how you may be active participants.

The first area we will explore is "Bridges." We will find as many types of bridges as possible through exploring the neighborhood and searching for pictures. We will meet in a group and discuss our findings. The next day we will make a chart with words and pictures related to bridges which we will review several times so the children become familiar with words such as water, over, steel, brick, train, foot or covered. By using blocks, we hope to make some bridge constructions. If several children are interested, we plan to use e-mail to communicate with a school near a famous bridge. We will be able to find schools which have a Web site through our local library.

Now we turn to you as parents. There are many ways that you may become involved. Do you have picture of bridges taken during family vacations? Is there a bridge near your home where you can take your child so she or he can make a drawing? Do you have memories of a special bridge you liked as a child? Perhaps you can visit our classroom and tell the children about it. I hope you have time to go to the library with your child to search for books related to bridges or the broader topic of transportation. You know that the most important activity that you can do with your child is to read to her or him. Particularly if you have a flair for drama, perhaps you will come and read to the children in our class.

During these activities we will be providing many opportunities for your child to interact with materials related to reading. Notice that we are trying to build up a meaningful base of understanding so that a familiar set of words is introduced. Later the children can explore the words by searching for those that rhyme or have the same, first or last letter. I will assist children in writing a "story" using some of these words. We will not worry about spelling for now!

We are anxious to hear how you will be able to participate in this theme.

Sincerely,

Your child's teacher

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# A Comparison of the Effects of Teaching Phonics Through Literature and Teaching Phonics Through Spelling on First Grader's Reading, Writing and Spelling Competence

THERESA A. ROBERTS AND ANNE MEIRING

This study examined the development of first grade children's reading, writing and spelling competencies in a balanced literacy program that included two different instructional contexts for teaching the alphabetic principle. Children were randomly assigned to either of two treatments designed to teach the alphabetic principle. One treatment utilized a modified version of the McCracken spelling program and the other group participated in a phonics embedded in literature program for 58 instructional sessions. Significant differences were found in favor of the spelling treatment on measures of spelling of both phonetically regular real and pseudowords but not on sight words. Children receiving the spelling program also scored significantly higher than the context group in their ability to read phonetically regular pseudowords and in writing fluency. There were no significant differences between treatment groups on the reading scores of the Metropolitan Achievement Test. Discussion focuses on a) the benefits for both spelling and reading of teaching the alphabetic principle in a spelling context and b) the comparison of phonics instruction in context and context-reduced instructional approaches.

There has been a national call for the inclusion of more explicit and systematic skills instruction in beginning literacy. This call has been based on the extensive scientific evidence that both phonemic awareness and understanding the alphabetic principle are strong predictors of reading acquisition (Adams, 1990 ). Additional evidence indicates that explicit, systematic instruction in both phonemic awareness and the alphabetic principle improves children's performance on a number of phonological tasks and reading performance (Ball & Blachman, 1988; Bradley & Bryant, 1983; Byrne & Fielding-Barnsley, 1989;

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McGuiness, McGuiness & Donahue, 1995; Tunmer, Herriman & Nesdale, 1988). In this paper, the term phonemic awareness refers to the child's ability to solve linguistic tasks that require sensitivity to the sound features of language such as identifying rhymes, isolating phonemes in various word positions, and putting phonemes together. The term alphabetic principle refers to understanding the systematic relationship between letters and their associated sounds. Mastery of this principle is dependent upon phonemic awareness.

An additional rationale for this new national emphasis on direct and systematic beginning literacy skills instruction is the strong possibility that many whole language and literature-based beginning literacy programs that were implemented in the late 1980's have not had sufficient emphasis on these two crucial beginning reading skills. Indeed some of the strongest proponents of whole language orientations have argued that the necessary phonological processing skills such as the alphabetic principle will be learned incidentally within the activities of a print rich instructional program that utilizes literature, integrates reading, writing and spelling and provides for literacy activities that are authentic and meaningful. No direct teaching is necessary or desirable (e.g. Goodman, 1986; Shapiro & Gunderson, 1988). Other writers in this philosophical orientation suggest that the teaching of skills may be acceptable, but that it should occur in the context of engaging with meaningful literature (Holdaway, 1979; Newman & Church, 1990).

However studies consistently reveal that children, particularly those most at risk for reading failure, benefit from more–, not less–, direct and explicit instructional support for learning phonemic awareness and the alphabetic principle ( e.g. Bowey, 1995; Foorman, Francis, Beeler, Winikates, Fletcher, in press; Foorman, Francis, Novy, & Liberman, 1991; ). Foorman et al. (1991) found that first grade children in three classrooms who received more letter sound instruction improved at a faster rate in correct readings and spellings when compared to children in three classes who received less letter sound instruction. Foorman et al. (in press) report that a larger proportion of children receiving Chapter 1 services benefitted from a direct instruction program in comparison to either a whole language or embedded phonics program where skills were taught embedded in children's literature. Thus, these studies reveal that both the quantity and the qualitative nature of skills instruction influences literacy acquisition. A fuller understanding of these qualitative factors that influence the effectiveness of beginning literacy skill instruction is needed. In other words, what characteristics of the instructional context seem to make a difference? Does the use of gamelike instruction have an impact? Does the amount of child response matter? Does the use of writing responses make a difference? What effects does the use of children's literature as a context for skills instruction have? The purpose of the present study is to examine the effects of systematic, explicit delivery of alphabetic principle instruction in two different instructional contexts: reading of children's literature and spelling instruction. The rationale for the section of these two contexts is given below.

Many educators striving for a balanced approach to literacy recommend that skills instruction be taught in the context of meaningful text, drawing on the opportunities for phonics instruction afforded by the particular selection that is read. However there has been little research actually examining the effectiveness of this claim. While the Foorman et al. (in press) study discusses an embedded phonic approach, this treatment actually differed from the comparison direct instruction treatment on a number of different variables thus making it difficult to isolate the effects of just the literature context. The present study addresses this issue by equating the two comparison groups on the sequencing, amount of time, amount of blending and number of direct instruction exposures to the target letter-sound correspondences. What differed was whether or not the instruction was connected to children's literature or to spelling instruction. We do not use a control group that received no systematic, direct instruction since both participating teachers felt very strongly that such a treatment was ethically unacceptable. Given the frequency of the claim that the alphabetic principle and other phonological elements of children's literacy acquisition can be taught in the context of children's literature, we felt that research examining this claim is sorely needed.

Both older and more recent studies attest to the importance of phonological processing in spelling and writing acquisition as well (Chomsky, 1979; Clarke, 1988; Ehri, 1988). These studies show that the development of spelling ability can be characterized as moving from letter awareness to semi-phonetic and finally to phonetic principles and that at even the earliest stages children are utilizing phonetic cues to guide their developing competencies in writing (Clarke, 1988). Further evidence reveals that children progress faster in reading and spelling if they receive spelling instruction in the early grades (Tangal & Blachman, 1995; Uhry & Shepherd, 1993). The purpose of the above studies was to examine the effect of spelling instruction on children's spelling and reading performance. Instruction in spelling patterns was included in the program. We were interested in examining whether or not children's *attempts* to spell words in lieu of instruction in specific spelling patterns would influence their reading and spelling. Our reasoning was that, as children attempt to generate spellings for words (beginning with just initial and final consonants), they must make decisions about the phonological information they receive in the oral pronunciation of the word and the orthographic (written) form that represents the sounds they have isolated. In addition, the child must segment phonemes when they take an oral pronunciation and assign written letters to the sounds that they hear in the word. Segmentation ability has been shown to be a higher level component of phonemic awareness and closely related to reading ability ( Adams, 1990; Yopp, 1988). Thus, it is possible that linking alphabetic principle instruction with attempts to spell words that include target letter-sound correspondences will enhance both children's reading and spelling performance.

The two instructional treatments were also designed with consideration of research indicating that a) letter-sound correspondence knowledge is a highly significant predictor of beginning reading achievement (Biemiller, 1977-79; Bond & Dykstra, 1967; Ohnmacht 1969; Perfetti, Beck, Bell & Hughes, 1987), b) blending and segmentation ability are requisite competencies for fast accurate lexical access (Fox & Routh, 1976), and c) an adequate number of word exemplars of target patterns may be necessary to ensure mastery of the alphabetic principle (Juel & Roper-Schneider, 1985). Thus both treatments included instruction on letter-sound correspondence, segmentation, blending and included eight exemplars of each target correspondence in every lesson.

## METHOD

### *Participants*

Sixty students from two first grade classrooms initially participated in the study. The students attended a lower-middle class to upper-lower class public elementary school. The ethnic make-up of the school population was 45% African American, 26% Filipino, 10% White, 7% Hispanic, 9% Asian and 3% Pacific Islander. Nine percent of the students came from families receiving AFDC, 40% of the children received subsidized lunches and 18% of the students received English as a second language support. Over the course of the year, seven individuals were lost from the sample.

### *Materials*

*Reading tasks.* Each child was individually administered four reading tasks at the beginning, middle and end of the first grade year. Children individually read a story that they had just completed reading in class 3-5 times with the whole group. This was a measure of the children's ability to read in context. An additional reading task required the children to read 26 words drawn from the same story presented on 3" x 5" cards. This task served as a measure of context-free reading of the same words that had already been read in context with the teacher. A third task, similar to the first, required children to read the next selection that they would be reading as a whole group in class, but which they had not yet read. This task served as a measure of independent reading in context. The final reading task required children to read a series of 20 phonetically regular pseudowords composed of CVC, CCVC and CVCC word patterns presented in lower-case letters printed on 3" x 5" cards. This task was designed as a measure of the children's ability to read words using phonemic analysis since performance on these words is highly unlikely to be influenced by previous visual exposure and is considered to be a clean measure of phonological processing (e.g., Calfee, Venezky & Chapman, 1969; Harris & Sipay, 1990; Perfetti & Hogaboam, 1975; Tunmer & Nesdale, 1985).

*Spelling tasks.* Children were administered three spelling tests on each of the three testing occasions during the year. Children were given a spelling test of 20 phonetically regular real words using CVC, CCVC, CVCC word patterns. They were also administered a test of phonetically regular pseudowords that were formed by transposing the initial and final letter of words appearing on the test of phonetically regular real words. Thus the real word and pseudoword tests were composed of the identical letters and letter strings; they were simply put together differently to form both real and pseudowords. The inclusion of the pseudoword spelling test was done to obtain a measure of children's ability to use phonemic principles in spelling where there was no possibility that they had learned specific spellings through previous reading of the words. A final test of 20 high frequency sight words, drawn from grade level lists that came with the texts used in the children's classrooms was also developed.

*Writing tasks.* Children were asked to write on three different topics, one topic during each testing session. The topics included: "toys", "recess" and "friends." Topics were selected to ensure that all children would have related prior knowledge, that they were relevant to experiences that children were interested in and that they did not require a specific genre for response. Children were encouraged to generate spellings for words on their own and were allowed to write until they chose to stop. Each writing assessment was done as a whole class activity. These stories were scored for number of words as a measure of writing fluency and number of separate idea units.

### *Treatments*

*Spelling context.* There were two experimental treatments designed to teach letter-sound correspondence: spelling context and literature context. Students in the spelling group participated in 20-30-minute daily lessons modified from the McCracken *Spelling through Phonics* program (McCracken & McCracken, 1982). This program is designed to teach letter-sound correspondences and to develop competence in analysis of the sequence of sounds in words. The program includes three types of lessons: introduction of a new letter, review of all letters previously taught, and whole word lessons.

For the first type of lesson the teacher introduced a letter of the alphabet and its corresponding sound. The teacher then dictated eight words. Each word contained the target letter in either the initial or final position. The students were instructed to listen to the dictated word, repeat it aloud and to write down the target letter on their individual chalkboard. The chalkboards were marked with two horizontal lines, side by side, in order to allow students to indicate whether they heard the target sound in the initial or final position. Each letter of the alphabet was practiced in this way for two days for a total of 16 words.

A review lesson occurred after each new letter was practiced for two days. The procedure for each review lesson was identical to the regular lesson, except that the teacher and students reviewed all the letters taught previously, and the students wrote down the initial and final letters for words dictated during the review.

Whole word lessons occurred after the introduction of vowel sounds, beginning with short a. The teacher dictated whole, phonetically regular words consisting of letters taught previously and the students repeated the word once and generated spellings for these words on their chalkboards. Blending of the dictated words was then modeled by the teacher by slowly saying the sound of each letter as her hand was passed under the letter of the word that had been written on the chalkboard and then repeating the same process quickly. Children practiced by orally responding with the teacher.

During all three types of lessons, the teacher circulated and provided individual help and feedback to the children. Letter-sound correspondences were taught in the following sequence: m, s, f, b, t, c, a, r, l, p, o, d, g, n, w, I, h, j, k, v, u, y, e.

*Literature context.* The phonics in context group participated in 20-30-minute daily lessons in which the alphabetic principal was taught within the context of children's literature. Picture books selected from the California State Department document, *Recommended Readings in Literature: Kindergarten through Grade Eight,* were used to teach letter-sound correspondences and blending skills, using the same sequence of letter-sound correspondences that were taught in the spelling group (see Appendix for a list of the selected books). Each lesson began with a story read by the teacher. After the story was read, a letter of the alphabet and its corresponding sound were introduced. An excerpt from the story that had been selected because of its representation of the target letter was displayed to the students on large chart paper. As the teacher read the excerpt, the students were instructed to listen for words containing the target sound. The excerpt was then read one more time with the students chorally reading along. On the third reading, the students used a hand signal to indicate whenever they heard the target sound and the teacher circled the target letters in the words in the excerpt.

Next, each student received two different colored cards. One color was designated to represent the beginning of the word and the other color represented the end of the word. The teacher spoke eight words from the story excerpt written on the chart paper, each containing the target letter in either the initial or final position. The students were instructed to listen to the spoken word, repeat it aloud and hold up the card corresponding to the position in which they heard the target sound. Each word was then shown to the students on a card and the teacher guided them in reading the word and noting the position of the target letter.

Each letter of the alphabet was studied for two days for a total of 16 words as described above. After the introduction of each new letter, a review lesson was presented. Each review lesson was identical to the regular lessons, except that the children identified in a story all letter-sounds studied to the point of the review, and they listened for and identified both the beginning and ending sounds of words from the story that contained letters presented thus far.

After the introduction of the vowel sounds, it was possible for children to study whole phonetically regular words in the context of the literature selection. After reading a story to the students, the teacher identified phonetically regular words in a story excerpt. She modeled and the students practiced blending the target words in the same way that was done in the spelling group. The students then read the excerpt aloud with the teacher.

Thus the two treatment groups were equated for the length of the lessons, the sequence of phonemic skills taught, the number of exemplars of the target sound that were given, the requirement of a response by the students to indicate initial and final position of target sounds, the sequence of regular and review lessons, the use of whole group instruction and the practice in using the letter-sound correspondences to blend whole words on the review lesson.

The rest of the literacy development program in place in both classrooms relied heavily on repeated and choral reading of literature, basal texts and big books. There was also daily response journal and expressive writing using invented spelling. Extensive use of oral discussion, sustained silent reading, text-related art projects and integration of language arts with other areas was also included in both classrooms. The two teachers planned the literacy program together on a daily basis and devoted a two-hour block to literacy activity every day. Thus the two classrooms can be characterized as providing a print rich environment with a great deal of meaningful literacy activity balanced with systematic, direct instruction in the alphabetic principle.

Students were randomly placed into one of the two instructional groups Each day during the 16 weeks of the experiment, each child received consistently received one of the two types of instruction. All lessons were taught from prepared scripts. Every four weeks the teachers changed groups as well. Thus, potential classroom and teacher effects were controlled.

The same letter-sound correspondence, review lesson or whole group lesson was taught each day in the two groups. The words that were used in each type of lesson came from either the lists available in the *Spelling through Phonics* manual for the spelling group or from the literature selection read to the class for the literature group.

The reading, spelling and writing tasks were administered either individually or in groups during early October, February and May. For the reading tasks, children were tested individually. The spelling and writing tasks were given to the entire class in each classroom.

## RESULTS

Tests conducted in February and May revealed that children in both treatment groups showed significant improvement in all the reading, spelling and writing tasks from October to February and from February To May. Thus both instructional groups were associated with significant growth in literacy. Examination of how the literature group performed in comparison to the spelling group was done by comparing the February and May scores of the two groups on the reading, writing and spelling tasks, taking into account that the children were measured on the same tasks on two occasions. These statistical analyses revealed that there were no significant differences between the treatment groups on the standardized Metropolitan Achievement Test comprehension scores in either February or May of the first grade year.

The effects of treatments on the measures of contextualized and decontextualized reading based on classroom texts, word reading of pseudowords based on phonetically regular patterns of words found in classroom text, spelling and writing were examined. Since there were nine different reading, spelling and writing tasks, there were a total of nine statistical analyses computed. These analyses revealed a superiority for the spelling group on five of the nine reading, spelling and writing tasks.

The spelling group scored significantly better on spelling of phonetically regular pseudowords at both time 2 and time 3, $\underline{F}\ (1,51) = 13.84$, $p<.001$ (time 2) and $\underline{F}\ (1,51) = 4.45$, $p<.05$ (time 3). The spelling group also scored significantly higher on spelling of phonetically regular real words at time 2, $\underline{F}\ (1,51) = 10.65$, $p<.05$. In addition, the spelling group scored significantly higher than the literature group on the pseudoword reading task at both time 2 and time 3, $\underline{F}\ (1,51) = 4.38$, $p<.05$ (time 2) and $\underline{F}\ (1,51)= 3.86$, $p<.05$ (time 3).

The analyses also revealed a significant advantage for the spelling group on the measure of writing fluency at time 3, $\underline{F}\ (1,51) = 4.52$, $p< .05$, and a marginally significant effect on the idea unit measure for writing at time 3, $\underline{F}\ (1,51) = 3.28$, $p=< .08$. Related means and standard deviations for variables associated with significant differences are presented in Table 1. There were no significant differences between the treatments on the reading tasks requiring recognition of words taken from readers or on word accuracy while reading familiar or new text stories.

*Table 1*

**Means and Standard Deviation for the Effect of McCracken and Context Phonics Treatments for Spelling, Reading and Writing Tasks**

| Measure | Spelling Group | Literature Group |
|---|---|---|
| Spelling phonetically regular pseudowords | | |
| February | 11.04 (6.59)* | 5.12 (4.91) |
| May | 12.00 (5.54)* | 8.40 (5.81) |
| Spelling phonetically regular real words | | |
| February | 11.56 (6.33)* | 6.25 (5.52) |
| May | 12.20 (5.37) | 9.86 (6.13) |
| Reading of phonetically regular pseudowords | | |
| February | 11.16 (6.57)* | 7.18 (7.20) |
| May | 13.16 (5.95)* | 9.57 (7.20) |
| Writing fluency scores | | |
| February | 38.84 (31.43) | 30.79 (26.87) |
| May | 46.36 (22.10)* | 33.64 (21.43) |
| Writing Idea Scores | | |
| February | 2.48 (1.76) | 2.14 (1.78) |
| May | 2.88 (1.56) | 2.14 (1.41) |

*Significant difference between treatments at p. ≤ .05 level.

## DISCUSSION

The findings from this study indicate a relationship between instructional focus and learning outcomes. Both the spelling group and the context group received equivalent instruction in regards to the sequence of letter-sound correspondences, the numbers of exemplars of each correspondence that was presented, the amount of blending and segmenting, the time allocated to the lessons and the requirement of an overt response to indicate whether target sounds occurred in the initial or final position of the exemplar words. The two treatments were primarily different on two dimensions: whether or not the phonics skills were taught in the context of children's literature or isolated from meaningful text and whether instruction required generation of spellings (encoding) or isolation of sounds from exemplar words (decoding). The spelling group, which emphasized generation of spellings, produced significantly higher scores on the spelling of phonetically regular real and pseudowords. These results indicate that instructional context influences literacy outcomes for lower- middle class and upper- lower class socioeconomic status first grade children. Further, the results suggest that instruction most strongly influences tasks that are closely related to the instructional context. The spelling treatment was most clearly associated with significantly better performance on tasks requiring spelling: spelling of real and pseudowords and writing.

However, there was also evidence that the benefit of the spelling treatment generalized to one reading task. The spelling treatment produced significantly higher performance on the recognition of pseudowords, a reading rather than a spelling task. Finding that spelling instruction had some benefit on at least one of the reading tasks indicates that spelling and reading are interrelated as reported by other researchers (e.g., Ehri, 1988; Lundberg, Frost & Petersen, 1988).

We suggest that the spelling group's superiority is due to an enhanced acquisition of phonemic principles. The fact that the spelling group did not produce better spelling of sight words, but did result in superior spelling of both phonetically regular real and pseudowords, supports the idea that acquisition of phonemic principles underlies the effectiveness of the spelling treatment on spelling tasks. Pseudoword tasks are accepted as probably the purest reading measure of phonemic processing since they represent orthographic (written) patterns that occur in the English language that have not been visually processed before. Therefore, differences in children' s performance on these types of tasks is very likely attributable to phonemic processing.

In this study it was also found that the spelling group was superior to the literature group on writing fluency as measured by number of words in stories. These results are compatible with the interpretation that explicit instruction of the alphabetic principle in the context of spelling serves as a scaffold for meaningful expressive writing. In other words, promoting facility with the word level skill of spelling supports the more complex process of expressive writing.

It is important to note that the superiority for the spelling context group was in comparison to an alternative, carefully matched systematic phonics program. The spelling context group's advantage is therefore all the more striking considering the comparable quality of the literature treatment group in terms of the research-based and systematic instruction of the alphabetic principle that was included in this treatment. We have suggested that the spelling group's superiority is due to enhanced phonemic processing in these children. What characteristics of the treatment could have contributed to this enhanced phonemic competence? We suggest that the *generative* nature of the spelling tasks in the spelling group as contrasted with the *analysis* of words from text in the context group is a likely explanation. As children assign letters to the sound they heard in the target words, they had to make decisions regarding which letter to assign to the sound and to write (generate) their association concretely. We suggest that the enhanced explicitness of letter-sound associations likely to have occurred from generating the letters that represent sounds and writing them could very reasonably contribute to better spelling and writing fluency. The potential role of generativity in acquisition of beginning reading and writing suggested by this study is an area recommended for further research.

It is also noteworthy that in the spelling treatment, in the strictest sense, phonics was taught isolated from the context of authentic reading, writing or spelling activity. This study demonstrates that relatively more isolated phonics instruction designed to teach the alphabetic principle through spelling is more beneficial to one measure of reading and to writing and spelling competencies than carefully matched practices that teach the alphabetic principle in the context of children's literature. These findings contradict the argument that the more isolated teaching of phonics is either ineffective or damaging.

The spelling treatment has been discussed in relation to the concept of "isolated" instruction since it represents the kind of instruction often referred to by the term by many educators. However, we prefer to conceptualize the spelling treatment as *explicit* instruction rather than *isolated* instruction because there is always related classroom context for any specific instructional practice. The extensive writing and meaningful text-based activities at the heart of literacy instruction in the participating classrooms very likely established a rich context facilitating transfer of the explicit and systematic instruction of the alphabetic principle to authentic literacy activities. We suggest that consideration of this broader classroom context related to literacy activity should be examined to understand the effects of specific teaching practices. The results of this study also encourage more careful consideration of how *isolated* instruction is different from *explicit* instruction.

These same results relate to another issue regarding explicit phonics instruction. There has been a great deal of debate regarding the degree to which lower-socioeconomic status children may benefit from greater degrees of explicitness and formality in instruction. Previous Project Follow Through research provides support for the position that lower-socioeconomic status children benefit from more explicit modes of instructional delivery (e.g., Becker & Gersten, 1982). Delpit (1987) has addressed this issue from a sociopolitical perspective and raises concerns regarding potential status biases in more incidental and less structured learning environments. On the other hand, whole language philosophy suggests that a meaning emphasis and use of children's previous knowledge and experience which is characteristic of many whole language programs should be more beneficial for lower-socioeconomic status children. Our findings indicate that the use of explicit, formal instruction in letter-sound correspondences with lower-socioeco-nomic status children was beneficial.

While our efforts document that phonics can be taught in the context of literature selections and that this approach is just as effective for several measures of reading performance as teaching phonics through spelling, this proved to be no simple task. It was very time-consuming and difficult to find literature books appropriate for first-graders that contained the required 16 exemplars of the target letter-sound correspondence. The particular letter-sound correspondence that was to be taught came to determine which book selection could be used for the less common letters. It is our feeling that unless teachers are very motivated to have a systematic phonics program taught through the use of literature, they will not do so until commercially available materials to support their efforts become available.

What does all this mean for instructional practice? First, instruction that uses spelling as a context for teaching decoding enhanced spelling, writing and in a more limited fashion, reading. Thus, phonics skill instruction delivered in the context of spelling appears to be more efficient and to impact a broader range of literacy processes than teaching phonics in the context of literature and should therefore be given strong consideration as an instructional context of choice. If teachers elect to use an approach where they systematically teach phonics through the use of children's literature, they should consider the need to supplement this approach with instruction that focuses more on spelling. They must also be prepared to invest the necessary time and effort to select literature that lends itself to the kind of systematic instruction necessary. On this note, we highlight that in the present study the effectiveness of the literature context occurred when there was a very systematic and explicit phonics component connected to the literature selection on *every day* of instruction. It is also important to note that instruction that focused children more on the spelling of words enhanced the length of written stories. Promoting greater skill at word level processes( spelling) appears to help, and certainly does not hinder, the more complex process of writing. Finally, teachers who work with economically disadvantaged children should be encouraged that more decontextualized and explicit instructional approaches for teaching some beginning literacy skills was certainly not harmful and indeed were more effective than a comparable instructional approach that used the context of children's literature.

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## APPENDIX

*List of Literature Selections Used in the Phonics in Context Treatment*

| *Title* | *Author* |
|---|---|
| 1. *Mike Mulligan and His Steam Shovel* | Virginia Lee Burton |
| 2. *Stone Soup* | Marcia Brown |
| 3. *One Fine Day* | Nonny Hogrogian |
| 4. *Blueberries for Sal* | Robert McCloskey |
| 5. *Dandelion* | Don Freeman |
| 6. *Ten, Nine, Eight* | Molly G. Bang |
| 7. *The Little Engine that Could* | Watty Piper |
| 8. *The Very Busy Spider* | Eric Carle |
| 9. *Corduroy* | Don Frieman |
| 10. *Little Red Hen* | Paul Galdone |
| 11. *The Tenth Good Thing about Barney* | Judith Viorst |
| 12. *Mr. Rabbit and the Lovely Present* | Charlotte Zolotow |
| 13. *Freight Train* | Donald Crews |
| 14. *The Tale of Peter Rabbit* | Beatrix Potter |
| 15. *The Cat in the Hat* | Dr. Seuss |
| 16. *The Happy Lion* | Louise Fatro |

| | |
|---|---|
| 17. *Ask Mr. Bear* | Marjorie Flack |
| 18. *Momo's Kitten* | Mitsu & Taro Yashima |
| 19. *Strega Nona* | Tomie DePaola |
| 20. *Caps for Sale* | Esphyr Slobodkina |
| 21. *Bread and Jam for Francis* | Russell Hoban |
| 22. *Make Way for Ducklings* | Robert McCloskey |
| 23. *Harry and the Terrible Whatzit* | Dick Gackenbach |
| 24. *Harry the Dirty Dog* | Gene Zion |
| 25. *Petunia* | Roger Duvoisin |
| 26. *Frog and Toad are Friends* ("The Lost Button" and "Spring") | Arnold Lobel |
| 27. *Alexander and the Wind-Up Mouse* | Leo Lionni |
| 28. *Bringing the Rain to Kapiti Plain* | Verna Aardema |
| 29. *William's Doll* | Charlotte Zolotow |
| 30. *Father Fox's Pennyrhymes* ("Miss Quiss") | Clyde Watson |
| 31. *Once a Mouse* | Marcia Brown |
| 32. *Big Bad Bruce* | Bill Peet |
| 33. *Umbrella* | Taro Yashima |
| 34. *The Shoemaker and the Elves* | Jakob & Wilhelm Grimm |

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# Exploring Math Concepts with Children's Books

BELLE AKERS

The purpose of this article is to discuss and demonstrate how children's literature is an important resource in mathematics instruction for young children. Books concerning the following concepts are discussed: numbers, one to ten; counting by 2's and odd and even numbers; groups or number patterns; large numbers, and the 100th Day of School. The successful use of the recommended books with kindergarten and first grade children is described.

Recent research (Hong, 1996; Jennings, Jennings, Richey, and Dixon-Krauss, 1992) reveals significant effects of the instructional use of children's literature on kindergartners' achievement in mathematics. The storybook content created children's interest in mathematics and increased their understanding and retention of mathematical concepts. Children's books also serve as a viable math resource in primary classrooms (Akers, 1996).

The purpose of this article is to discuss and demonstrate using this resource in mathematics instruction for young children. Books recommended here have been used successfully with kindergarten and first grade students.

As books are integrated with math curriculum, it is important to remember that students still need many opportunities to explore with manipulatives to build their knowledge of mathematical concepts and logical reasoning skills. Through hands-on activities with a variety of manipulative materials, children develop their understanding of new concepts and relate these to what they have already learned (Burns, 1988).

Integrating books with the math curriculum has several benefits, including cross-curricular connections in science, social studies and art (Akers, 1996), and literacy development through oral language, rhymes, and cumulative text. Books with cumulative text such as *Deep Down Underground* by Dunrea (1989) are wonderful for student participation as children chime in following the introduction of each new number. By the end of the book, students have not only practiced sequential counting but also practiced counting backwards as they count down from "ten red ants march and stamp when they hear"...to "1 wee moudiewort digging, digging deep down underground" (p. 15).

Math concept books provide an enjoyable format for children to develop their understanding of mathematical concepts. Pleasurable experiences with concept books help children develop and expand their familiarity with math vocabulary. The repetition or cumulative text found in math books can produce positive feelings and build self-confidence that have been found to be critical in shaping "an individual's disposition to learn and to use knowledge" (Baroody, 1992). Baroody noted:

> Affective factors such as needs feelings, and interests energize or motivate action and thus exert a tremendous influence on learning.... Affective factors such as drive, which involves interest, self-confidence, and perserverance, are important for problem-solving success.... (p. 153)

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Children's books that explore math concepts can be used for reinforcing concepts from simple counting to large numbers as found in *Count!* by Fleming (1992), *One Potato* by Pomeroy (1996) and *One is a Family* by Ryan (1996). More complex math concepts such as addition and building number combinations are found in *Domino Addition* by Long (1996), *12 Ways to Get to Eleven* by Miriam (1993) and *Splash!* by Jonas (1995). Numerical equations are clearly written out in *Domino Addition,* while vocabulary words (one, two, three, ...) are used to build number combinations in *12 Ways to Get to Eleven.* Through a story format of children at a pond, *Splash!* involves counting the combination of animals in or out of the pond as stated in the text. Since answers are not given, students have opportunities to filter information read aloud, look for animals and then count the total number of animals. Vivid, colorful artwork by Jonas keeps the focus on finding animals easily against the background of the blue pond.

## NUMBERS, ONE TO TEN

Counting provides an essential base for mathematical understanding. Stressing the importance of counting, Baroody (1992) stated:

> Teachers should be particularly alert for children who do not have basic counting skills when they begin kindergarten. Such children should be given ample, supervised, and purposeful counting experiences. Moreover kindergarten should extend the counting skills (foster, for example, counting backwards and counting by 2s and 5s) of all children so that they have a strong informal basis for arithmetic. (pp. 167-168)

The books and related activities recommended here and in the next section will help teachers provide that important base.

*Ten Black Dots* by Crews (1992) is an excellent selection for counting one to ten. Bold and colorful artwork show the one-to-one correspondence for each number. Children enjoy counting the black dots that are cleverly used in creative arrangements. Counting the different arrangements develops strategies for keeping track of what has and has not been counted (Baroody, 1992; Ginsburg, 1989). As a follow-up activity, children make their own "Dot Books" using one inch colored, adhesive dots. For kindergarten students, dictation may be taken for each number, while older students may use invented spellings to describe their artwork.

An extension activity for *Ten Black Dots* fulfilled several functions in my first grade class. While its main focus is that of counting, *Ten Black Dots* is also a great read-aloud for a "Colors" theme. Students were given a story booklet with sentence frames for one through five:

1 One ___(color)___ dot can make ________.

2 Two ___(color)___ dots can make ______.

3 Three ___(color)___ dots can make _____.

4 Four ___(color) ___ dots can make ______.

5 Five ___(color)___ dots can make _______.

First, students arranged the corresponding number of dots on each page and completed artwork. Next, they filled in color words and sounded out names for illustrated objects. After practicing and reading together with a teacher, students read their books with partners. From the completed Five Dots booklets, informal observations were made about a student's writing progress as well as number recognition and sequence counting, one to five (or ten, if desired). Students' independent spellings included:

"Two blue dots can make *clas* (clouds)."
"Four yellow dots can make a *lamminteer* (a lemon tree)."
"Three red dots can make *is gem* (ice cream)." (Artwork shows a triple scoop cone.)
"Four yellow dots can make *potavgod* (pot of gold)."
"Two red dots can make *srobe* (strawberries)."

Text and illustrations from *Deep Down Underground* by Dunrea (1989) and *Over in the Meadow* by Keats (1971) show animals from one through ten. These books develop the principle of cardinal number and that of the last number counted establishing the number of the set as a whole (Gelmon & Gallistel, 1978; Gelman & Meck, 1986). These books also can easily be integrated with science themes related to animals or habitats. A set of animal cards (for either book) are made by having students illustrate the number of animals in the story on 4" x 6" or larger index cards. Additional math activities using student-illustrated animal card sets include sorting, graphing and practicing mathematical concepts such as *more than/less than* and *even* or *odd*.

Math graphs (or sorting) can show animal movement (walk, crawl, fly), number of legs (2, 4, 6, 8 or more), body covering (fur, scales, feathers, skin) and scientific classification (mammal, insect, bird, fish, reptile). Sorting and representational graphs with animal card sets can be done on the floor or in pocket charts with individual categories written on sentence strips. One advantage of making index card sets is that they are versatile and reusable over a period of several days. Once math activities have been completed, cards may be glued on a permanent class-selected graph.

Animal picture card sets were also used to engage students in mathematical reasoning through comparison and contrast about even-odd distributions and *more than* and *less than*. The teacher wrote the words *even* and *odd* on two separate index cards, and these concept cards were used as column headings on the pocket chart. For even/odd number practice, students took turns finding an animal card to place under the correct column. After sorting all the animal cards for even/odd numbers, first graders insisted on putting the cards in numerical order. When this task was completed by volunteers, the whole class recited each column, even numbers: 2,4,6,8,10 and odd numbers: 1,3,5,7,9.

Animal cards were also used for identifying number values for *more than* and *less than* concepts. The *more than* and *less than* relationships require children to make a numerical comparison. Baroody (1992) stressed the need for providing such comparative experiences in kindergarten. He stated: "Unfortunately, this important skill is often overlooked or not adequately emphasized in the evaluation and the teaching of kindergartners" (p. 159).

Once again, each concept is printed on individual index cards. Working with one concept at a time, *more than* or *less than*, student volunteers were asked to find and place appropriate animal cards in front of and after the concept card. Then students "read" their math statement to the class. For example: "eight lizards are *more than* two fish," "five honey bees are *more than* four muskrats." After each turn animal cards were removed until all cards had been used in making combinations. Examples for less than included: "one turtle is *less than* seven crickets, six crows are *less than* ten fireflies".

Since card sets are kept on the math shelf, they are handy to use during transitions while students gather together or clean up for the next period. These cards are an excellent resource for providing whole class, small group and individual practice of number values.

## MATHEMATICAL CONCEPTS

The books discussed in this section will provide the extension of counting skills urged by Baroody (1992). Children count by 2s as they learn about even and odd numbers. *Even Steven Odd Todd* by Cristaldi (1995) and *Crayon Counting Book* by Ryan and Pallotta (1996) develop students' understanding of even and odd numbers. *Even Steven Odd Todd* , from the Hello Math Reader series by Scholastic Inc. expands on the concept of even and odd numbers through a read- aloud story. Readers are introduced to Even Steven who likes things in even numbers, such as six cats, ten goldfish, twelve pancakes, and Odd Todd who likes odd numbered things, such as rubbing his stomach 13 times, eating three pancakes and a triple scoop of ice cream. Following an initial reading, my students chimed in on counting even numbered objects for Steven and odd numbered objects for Todd as objects were pointed out on appropriate pages.

An extension activity provides students with an opportunity to illustrate objects (from the story) that match a corresponding number. A recording sheet is divided in two columns, one for Even Steven and one for Odd Todd. Each column lists numbers and objects for each boy. In the blank space, students illustrate objects, as listed. For Steven illustrate: 2 loaves of bread, 4 books, 8 stamps and 4 slices of pizza. For Todd: write in the numbers for knocks at the door (3,5,7) and illustrate: 3 suitcases, 3 pancakes, and 9 gummy worms (on his pizza).

*The Crayon Counting Book* challenges students to count even and odd numbers, one through twenty-four. The colorful arrangements of crayons on each page makes counting aloud by even or odd numbers a successful experience. Students participate in counting aloud even numbers for the first half and odd numbers in the second half of the book.

*One, Two, One Pair!* by McMillan (1991) explores the concept of pairs, and *What Comes in 2's, 3's, & 4's?* by Aker (1990) expands on higher number sets of objects. Both selections develop the concept of finding groups of objects to explore number values, such as two items for pairs or four same items on an object (car has four wheels, table has four legs, square has four corners, etc.). After reading *One, Two, One Pair!* , students were given a homework assignment to find things at home that came in pairs. The next day, homework drawings were shared in class. Commonly found pairs of objects included: shoes, boots, socks, mittens, earrings, curtains (from a bedroom and living room). Some students also named body parts such as eyes, ears and hands.

For an extension activity, students selected one pair of objects to illustrate for a class book, "One, Two, One Pair". The repetitive text on each page: One, two, I see a pair of ________ provided for subsequent, successful independent reading experiences. Artwork by kindergartners can be drawn with markers, and first graders can cut out a pair of objects. To reinforce the concept of a pair, provide folded construction paper for students to draw on. When they cut out on the folded paper, it results in two of the same shapes - one pair.

### GROUPS OR NUMBER PATTERNS

Ginsburg (1989) noted the importance of children developing grouping strategies and recognition of mathematical patterns. The books and activities presented in this section advance that development. *The Doorbell Rang* by Hutchins (1986) and *Stay in Line* by Slater (1996) explore grouping as a mathematical strategy to organize a dozen cookies and a dozen children, respectively. In *Stay in Line*, at various stops during a field trip at the zoo, twelve children are shown in arrangements of ones, twos and threes. *The Doorbell Rang* shows how one dozen cookies are shared by friends who come to visit Victoria and Sam. They are joined in subsequent pages by groups of friends, until there are a dozen children seated at the kitchen table. Both books show groups that result in an even distribution.

After reading *The Doorbell Rang*, we brainstormed what kinds of cookies might be favorites among the students. Our list included: chocolate chip, oatmeal, cookies with sprinkles, butter cookies, raisin, shortbread and gingerbread. After the children revealed their favorite cookies, we compared the actual selections with the brainstormed list. We found that gingerbread, chocolate chip and shortbread cookies were favorites and on the list. Surprisingly, Oreos had not been named on the original list, but Oreos were a favorite cookie of three students.

In class, students illustrated their favorite kind of cookie on 4" x 6" index cards, in a format similar to the animal card sets. The cookie cards were used for a variety of sorting and graphing activities, both on the floor and in two pocket charts, placed side by side. We sorted the cookies by shapes: round, oval, rectangle and other. Graph activities included looking at color (brown, yellow, tan, black, two colors) and identifying the kind of cookie (Oreos, chocolate chip, gingerbread, lemon snap, shortbread, butter cookie).

*Stay in Line* and *The Doorbell Rang* show the even distribution of groups. *A Remainder of One* (Pinczes, 1995) explores the uneven distribution of groups for the number 25. In this book Joe and the 25th squadron of ants practice marching in patterns that will please the queen who likes "things tidy". When marching in twos, Joe is asked by Sergeant Steven "to stand aside, so the troop will be even" (p. 10). The next two days, marching in rows of threes and fours, the troops passed by the queen only to discover that once again, there is an uneven arrangement and Joe continues to be "a remainder of one" (p. 11). Finally on the next try, marching by fives, the queen observes "the neatest, best troops...five in each row... - and that's counting Joe" (p. 27).

I often chuckle when I recall how two of my first graders solved the problem of an uneven number. One year, during 100th Day activities, a pair of students were making groups of threes with bear counters. After one hundred bears had been grouped, they were ready to count aloud the total number of sets. They counted very accurately in sequence and arrived at a total of 33 sets (of three). Knowing that there would be one left over, I explained that 33 sets of three equaled 99. I asked them if there had been an extra bear when they made the groups of three. Nodding affirmatively, they pointed out the set that contained four bears. My students expected their groups to come out even, very much like the queen ant in *A Remainder of One.*

## LARGE NUMBERS & 100TH DAY OF SCHOOL

Several books and 100th Day of School activities engage children with large numbers and extend counting skills with numerical knowledge. *One Watermelon Seed* by Lottridge (1986) and *One Hundred is a Family* by Ryan (1994) begin simply with numbers one through ten but then present the challenge of counting in tens. In *One Watermelon Seed* two children plant a garden with seeds and plants. The resulting harvest is counted by tens: 10 watermelons, 20 pumpkins, 30 eggplants, 40 yellow peppers, 50 tomatoes, ... until they have picked 100 ears of corn. *One Hundred is a Family* introduces one through ten and then continues by tens, through one hundred showing families in a variety of activities such as ten is a family cheering at a baseball game, forty is a family bringing in the harvest, sixty is a family sharing a neighborhood, and one hundred is a family caring for the fragile universe.

Whole class participation in counting by tens to one hundred is reinforced by circling or coloring in decade numbers on a laminated chart or one placed under plastic film. When introducing the concept of counting by tens on a chart, I follow (or sweep my hand) across each row of numbers until I reach the tens number. This develops the concept that a group of ten repeats each time until the sequential tens number is reached. Later, this concept will contribute to learning about place value.

Other literature selections that develop counting by tens through fifty are: *One Potato* by Pomeroy (1996), *Ocean Parade* by MacCarthy (1990) and *Count!* by Fleming (1992). *One Potato* introduces numbers one through ten, ten through fifty (ten cherries, twenty radishes, thirty blueberries, forty grapes and fifty blackberries), and ends with one hundred sunflower seeds. *Ocean Parade* introduces number one through twenty, twenty through fifty (twenty green seahorses, thirty little purple fish, forty golden fish, fifty pink-and-green spotted fish), and then concludes with one hundred silver fish. Colorful batik paintings illustrated in two-page spreads invite counting aloud by children. Illustrated in a similar fashion to *Ocean Parade, Count!* explores counting by tens with animals. Brightly colored two-page spreads engage children in counting aloud for ten lizards, twenty butterflies, thirty snails, forty frogs and fifty bees.

In preparation for the 100th Day of School, I present warm-up activities a few days before and explore further with large number activities after the 100th day. Each year we brainstorm "Ways to Count a Large Number of Objects". First graders respond with these ideas:

"You can divide the group in half, then count."

"You can find another person to help you count."

"Count by 10's."

"Count by 2's."

"Count by 5's."

"You keep adding on numbers until you get to the end."

"You can count by 1's. It's the longest way."

"You can count by 3's. This would be hard. You have to know what number comes next."

Student responses give me an indication of the mathematical strategies they already have about making groups or using number patterns. I always encourage students to explain their ideas and even physically show them, if possible with manipulatives, on a number chart, chalkboard or paper. Students are also adept at helping each other out when a classmate becomes stuck and cannot find the words to explain an idea.

After trying out various groups (or patterns), most first graders agreed that counting by tens was the easiest and quickest. We discovered counting by ones and twos took a longer time to reach one hundred because "you count more numbers". Counting by threes and fours were the most challenging because "you have to count all the numbers each time" before the next one in the pattern, i.e. 1,2,3,**4**, 5,6,7,**8**, 9,10,11,**12**.

*One Hundred Hungry Ants* (Pinczes, 1994) is a "must" for teachers who celebrate the 100th Day of School! Follow along as one hundred ants make their way to a picnic site by breaking up into groups. First they arrange themselves in twos. Then threes, fours and fives when progress is not being made fast enough. Finally they arrange themselves in tens. However, by the time they arrive, there isn't any food left in sight.

During our 100th Day of School celebration, first graders engage in math activities using number patterns (or groups) that have previously been found in book selections. Using manipulatives, such as bear counters, colored links, pattern blocks and Linker Cubes (a Mathland material), students worked in teams to explore number patterns, such as 2, 4, 5, 10, with 100 objects placed on an 11" x 17" 100's chart. They count aloud their number patterns to the teacher. Each child then fills in his or her own number chart to take home. It is helpful to set a limit of two different colors of bears for the number patterns of 2, 4, 5, or 10 so that the colored patterns are easy to recognize in a diagonal orientation, as well as in vertical columns.

Linker Cubes are small, plastic squares that can be snapped together for three dimensional building projects. These are available from Creative Publications in sets of 100 to 500 cubes. Linker cubes are more versatile than unifix cubes which only snap in one direction for linear activities. Students working with Linker Cubes were challenged to find out how much space (or area) 100 Linker cubes take up, using number patterns of 4, 5 and 10 in a row and, then, to record that information. This activity contributed to understanding of spatial relations as well as number patterns.

The completed Linker Cube projects provided a geometry review for two shapes. Using grid paper, the same size as Linker Cubes, students outlined, colored in and cut out the shape of their projects. The paper shapes, one square and two rectangles, were glued onto chart paper or 18" x 24" construction paper for display and a class discussion. Students were encouraged to share their own observations about the chart. If needed, teachers can give prompts or ask questions to help direct students' mathematical thinking.

Students easily recognized that the ten rows of ten cubes made a square. A comparison of the two rectangles showed that the one made by fours was thinner and longer than the one made from fives. Linker cubes connected in rows of four created a tall, thin rectangle, 4 cubes across by 25 rows. Linker cubes connected in 5 cubes across by 20 rows created a medium width rectangle.

## MATHEMATICAL AWARENESS

A recent classroom experience shows the level of understanding first graders have developed in mathematical concepts and logical reasoning skills since September. After reading The Doorbell Rang (Hutchins, 1986) we played a game of Fair Share with a dozen cookies. Students worked together with a partner for Fair Share. Each pair of students shared one dozen paper cookies, bear counters and a recording sheet for how many cookies 2, 3, 4, and 6 bears would get. In Fair Share, the cookies are distributed one at a time to each bear. While students recorded information individually, I filled in data on a large size chart: Column 1 - number of bears (1-12), Column 2 - cookies and Column 3 - any left over?

After completing the data for numbers 2,3,4 and 6, we continued Fair Share (with bear counters) to complete the rest of the chart. As we recorded data on the chart, first graders started sharing observations about what was occurring. Someone noticed that the "number of left over cookies are getting smaller". Another student noticed that the numbers (in the left over column) were "going in backwards order". Using this observation we predicted what number of left over cookies would come up next, for 10 bears. Indeed, after each bear got one cookie, two were left over. The final prediction was made that there would be one left over after the next turn. Everyone cheered and clapped when there was one left over.

As we progressed in the Fair Share game, many smaller conversations were occurring between partners. Math phrases were overheard: "It's going to be a[sic] even number," "There's going to be some left over," "We need two more," "Now they only get one cookie each time," etc. These bits of information told me how much learning had occurred since September. The success of the Fair Share game was due in large part to the children's work with manipulatives and their application of concepts they had learned previously. I love being interrupted by students calling out: "Ms. Belle, I see a pattern!" "I noticed something." "Can I share an observation?"

The preceding math activity and discussion supports a developmental approach that give students opportunities to apply mathematical knowledge. In relation to this point, Baroody (1992) stated:

> They [teachers] should give children the opportunity to use their existing knowledge to puzzle through a problem or question. Teachers should listen carefully to children as they explain their ideas and solutions.... Even confused or incorrect answers can be informative because these reflect a child's current level of understanding". (p.156)

The math books, in this article, have provided a concrete source for students to see, hear and learn about mathematical concepts. The positive experiences from classroom use of math books not only fostered students' interest in learning math concepts but also engaged them in practical application of mathematical thinking through related classroom activities.

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# Transformation Towards a Balanced Curriculum

CHRISTINE CARLING

This article describes the process of changing a curriculum so that it was meaningful for children and balanced in content and instruction. The following three questions guided the process: How do I engage students' learning and teach skills outlined in the District Standards? How do I create conditions that promote optimal literacy attainment? How do I get students from an industrial age curriculum to one appropriate for the information age? The related review of research and theory is reported, and the development of curriculum is described, with the end product a knowledge-driven curriculum for the children and the teacher.

How excited I was when I learned that I was going to be transferred from a third grade to a kindergarten classroom. I had taught for 7 years in a preschool prior to the completion of my teaching credential and I felt like I was coming home. Over the summer, I spent many hours trying to develop a program that included teaching skills (letter sounds, counting, and building vocabulary). I made puppets, learned catchy songs, and found activities that began with the letter of the week. It looked great! In the Fall, students appeared to be having fun and could repeat all of the cute poems I had taught them. One day towards the end of the school year, my superintendent came walking through my room. Children were at centers making puppets, creating letter books, and making collages of pictures starting with that "Magic Letter." He sat down next to one of my brighter students and asked, "What are you doing?" The child replied, "Coloring a picture." I was devastated. I took off my rose colored glasses and realized that even though the curriculum was cute, catchy and probably resembled a daily birthday celebration, it was mindless. I began to question my program.

Two weeks later, while observing my students out in the playground, I noticed a group of children carefully examining a caterpillar. I quickly took advantage of this learning moment and placed the creepy crawler into a terrarium. We then gathered all the books we could find about how to take care of this unique creature. What happened in the next few weeks was nothing short of amazing. The children were eager to write about what they were observing, and they turned to books to find out more. Now, they were the ones who came up with questions to discuss. My students became engaged in their learning.

I discovered during those few weeks that young children did not distinguish learning by subject areas. Language arts, science, mathematics,

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and music were no longer separated but now integrated throughout the day. This allowed students to see in action the need for math, reading and writing skills as they immersed themselves in the topic of insects. They could see the authors intent as they chanted poetry, sang songs and listened to different genre of literature on our theme. I found that I had to eliminate my rigid subject time schedule so that students could become immersed in their projects without the fear of running out of time on a self-selected project.

Student's sensory and observation skills developed as they had more opportunities to see, touch, listen, smell and taste. A chirping cricket in the classroom was no longer ignored but appreciated, especially after the children had experienced the book *The Very Quiet Cricket* (Carle, 1990). Children were able to comprehend what it might feel like to be a caterpillar in a chrysalis as they crawled into a large cloth bag. Using their knowledge about spatial awareness, they guessed what shape their friend's body was inside that "cocoon." They collected, sampled and compared honey made from different kinds of pollen.

Students began to use higher degrees of listening, speaking, and problem-solving skills, and reading and writing became means of research and communication. They used their new vocabulary and experimented with their developing alphabetic code, creating beautiful posters inviting the community to visit their "Insect Zoo." The children practiced oral speaking skills as they became the museum guides for guests who came to see and hear about their collections. Phonemic awareness developed as the children chanted the rhythmic books *Bee's Sneeze* (Nadler, 1993) and *I Can't, Said the Ant* (Cameron, 1961). Students used research skills to seek knowledge about a particular topic. They demonstrated higher comprehension skills, noticing errors in literature books I read to them. My students were deeply upset when a favorite author, Eric Carle (1989), had a butterfly coming out of a cocoon in his book , *The Hungry Caterpillar.* As one student stated, "Butterflies do not come out of cocoons, only moths." An appreciation of the role insects play was observed on a walk to our community library, when students noticed, identified, and carefully warned others to walk around the insects that had crawled into our path. Technology became easier to integrate into the classroom as students researched information about a particular topic on the internet, typed out responses, and communicated their findings to e-mail pals. Children began to evaluate their own progress and set their own learning goals. Attendance went up. Parents became more involved as they saw student enthusiasm for what they were learning at school. But best of all, the children wanted to learn.

I knew that what I had observed held the key to a more meaningful learning experience for my students. Three questions came to mind, and I spent the next summer investigating them by reading numerous educational theorists. Following are the three questions:

> How do I engage students' learning and teach skills outlined in the District Standards (reading, writing and math)?
>
> How do I create conditions that promote optimal literacy attainment?
>
> How do I get students from an industrial age curriculum (set patterns and responses) to an information age curriculum (asking questions and knowing how to retrieve the information)?

## REVIEW OF THEORY AND RESEARCH TO BUILD THE CURRICULUM

Through my research I learned that an overemphasis on narrowly defined reading and math skills along with excessive drill threatens a child's interest in using the skills they have acquired. Landen & Williams (1979) write that forced activity produces negative student attitudes which correspond to poor on-task time and performance. Worksheets often isolate various skills from the context of complete and meaningful written language. Commenting on skill sheets, Schickendanz (1986) stated, "They can make reading and writing a great mystery for children and can severely limit children's ability and desire to learn" (p. 118). My personal observations indicated that skill sheets only addressed the needs of a fraction of my students, for most this work was too easy and for the rest, too difficult. I never heard a child get excited or want to share what they learned on a skill sheet. In fact, students were often easily distracted from completing the task. Too often, students who have great difficulty performing on these sheets are given more of the "skill and kill" kind of program.

Dweck, as cited in Katz & Chard (1989), noted that an emphasis on performance on skill sheets usually resulted in little recall of concepts over time, while emphasis on learning generated long term understandings. Optimal student learning then should be a balance between a child-centered and a content-centered curriculum.

Piaget (1969/1971), a leading authority in the field of child psychology, indicated that the development of an engaging curriculum requires that time be given for physical experiences, explorations, social interactions, and reflections. As students search for patterns and connections to existing understandings, they need to interact with the environment. A topic of interest from the child's world, in addition to serving as a source for knowledge, also stimulates intrinsic motivation. Deci and Ryan (1987) stated that interest is based on the need for competence as well as need for autonomous initiation. Kohn (1991) noted that students who reach for excellence enjoy what they learn. An added bonus is that interest gives students the ability to become absorbed in an activity or concern outside of themselves (Deci and Ryan, 1987).

A child's inventiveness and discovery, however, are directly proportional to the number and kinds of materials in the classroom (Nicholson, 1974). This does not mean that a teacher has to buy or create all the materials; instead, students need to be the active participants in building the learning centers in their classroom. Bug collections, student-made books, and class murals are just a few ways students can help to create their environment and gain a solid sense of ownership in their learning.

I found that, as Duckworth (1987) noted, students exhibit more creative ideas when they are involved in an active learning program. With the concepts, materials and time, my students were able to develop their own multi-media presentations, create towns out of empty cartons, compare flight distances of different wing spans of paper airplanes, and gather and interpret information in student-initiated informational surveys that went far beyond grade level expectations.

An active environment does not mean a messy or disorganized classroom. Everything must have its place for students to be able to participate in taking responsibility for their own learning. A carefully planned environment also provides for a variety of grouping opportunities. For example, places should be provided for solitary reflection as well as small group and whole class experiences. Places should be provided where the play is more structured, and yet other areas need to invite creativity and exploration. The room must have aesthetic value, good lighting, soft and hard places to explore. A developmentally appropriate environment promotes moderate risk taking and in return increases performance, persistence, perceived competence, pride and satisfaction over time (Trope, 1979).

A move away from a skills--based curriculum does not mean that the children are left without structure. The teacher is the key facilitator in taking each child's understandings, interest and desire to learn and directing the learning process towards the District and State Standards.

The curriculum is built upon students' prior knowledge and new concepts they need to attain. The content needs to be a springboard to a new theme. Caterpillars led to the study of all insects. Insects led to how bees help plants by pollinating the flowers. This led to a unit on plants, which led to a broader theme of farms, then to a focus on Native Americans and how each tribe's habitat affected their farming styles. Each unit stimulated interest in a related topic, thus creating a spiral curriculum in which knowledge becomes greater in depth and breadth.

Yet the curriculum needs to include activities that draw upon different learning modalities, thereby increasing the chance that all children will find some aspect of the theme that interests them; thus they remain a part of the community of learners with a shared experience. Activities must be concrete, providing ample opportunities to engage all the senses in explorations. Students love to fingerpaint to Rimsky-Korsakov's, "The Flight of the Bumblebee." Future carpenters delight in building wigwams, teepees, and hogans, as they learn to appreciate cultural housing differences. Children use their auditory discrimination skills to challenge each other and adults in identifying bird calls.

Learning requires that students take educational risks which arise as by-products of working with real objects over time. Erikson (1950) wrote that children must first develop trust and autonomy (self-assurance) before they can take initiative or the risk needed to construct new understandings. Right and wrong answers promote anxiety and thus should be deemphasized. Also, stars and stickers on papers undermine intrinsic motivation and reduce children's interest in their work (Sternberg, 1990).

Content-based programs provide opportunities for students to engage and use their language meaningfully. The fact that a thematic unit spans a considerable period of time allows the students to develop, share, and eventually understand both the language and conceptual content of the unit. Skill sheets segregate students; content-based instruction unites.

The challenge then for me as a teacher was to ensure that the content of the curriculum took full advantage of the child's natural abilities, interests and enthusiasm for learning, yet taught those important skills (School Readiness Task Force, 1988).

## CONNECTING DISTRICT STANDARDS AND THE CURRICULUM

It becomes easier to connect District Standards to a curriculum that is based upon real learning experiences. Teachers who are knowledgeable about their District Standards and the developmental sequence of how students learn can weave the two together to make the learning experience meaningful for the young learner. Today we hear the call, based on research, for explicit phonics instruction, but we also know from research that reading and writing require more than knowing the ABC's and sound-symbol correspondence. A balance between reading for "meaning" and learning the proper orthographic codes is necessary.

A kindergarten literacy program needs to be a blend of reading, writing, oral language and literature. It requires a rich environment that immerses students with meaningful print of all types, opportunities to listen and discuss written information, and time to respond either through acting, drawing or writing. Children need to know that print and speech are related. Teachers must model this behavior by both reading and writing in front of the children. Children also need the opportunity to play with words, enacting aspects of the concept (The cow goes moo.), rhyming words, and saying words that begin with the same initial consonant, including playful alliterative sentences such as "Cows can carry canaries."

Students strive to gain power over the printed page. My students place newspaper clippings, poems, labels, cartoons they have found and wish to share with other students in a heart shaped box. A "dare" basket of leveled books is placed in the middle of my room to invite students to read independently. A child taking the dare proudly puts his or her name on the back cover and then encourage others to read and discuss the book in a student formed literature circle. Students create their own listening tapes of favorite stories in the recording studio. Children love to read the charts on the wall using a stuffed garden glove glued to a stick to guide their reading. A computer camera takes lots of pictures of students' work and activities. These pictures and their student-dictated captions are placed in the class photo album and read over and over. A letter greets the children every morning with information about what the children might be learning that day. Literacy centers, although focused on a concept, are built to help students focus on important skills needed to speak, read and write. Cookie sheets are screwed into the ends of bookshelves for students to create stories using magnet letters or words. Flannel is stapled onto backs of bookcases to allow more students to retell stories with felt characters. Letter formation is practiced with paintbrushes and water, goop boards, or salt boxes.

The environment becomes a support for literacy development. Reading and writing must make sense and be a pleasurable experience, one in which the student is actively engaged. A rich print environment allows students to see labels and signs of familiar objects in the environment, create their own student-dictated stories, reenact familiar stories, and incorporate print in dramatic play and other activities. Students learn quickly about the differences in writing a report, a story or letter when these are done in real contexts. They learn the importance of writing for the audience when sitting in the author's chair and sharing their story with the class. Students need to feel they have ownership in their environment in order to take risks needed to learn to read. Students bring from home articles from the newspaper, letters from grandparents, and empty cereal box cartons to read to other students. These items are placed in a "treasure box" for other children to read. Student produced print is attractively displayed on walls, doors, and even from the ceilings. The local newspaper became involved when they printed a letter we wrote as a class about how the wetlands behind our school were being mistreated by humans. A classroom environment such as this one engages students in a print rich environment and builds on autonomous initiation, and this environment promotes literacy.

The District Standards were also easy to implement in other curriculum strands such as mathematics. Students used geometry skills as they molded insects out of clay and drew the 2-D representations of their creations in their journals. Students learned graphing skills when interviewing friends about favorite insects, and they learned how to measure when they documented size changes of their growing caterpillar in their journals. Students learned about symmetry and correspondence as they painted one half of a butterfly on one side of a folded paper and then pressed the design on the other side. Students played with patterning skills as they designed caterpillars with pattern blocks and cubes. In all these activities, district standards were addressed. Learning became faster and more efficient as students used their developing skills in meaningful ways.

## CONNECTING LEARNING AND TEACHING

How children learn should determine how teachers teach. The philosophy behind modern curriculum development is that children are not vessels to be filled with knowledge but are instead active seekers of understandings. Active learning builds on itself to increase the competence of the child. This competence then increases a child's pleasure by making even more inventive acts. This cycle repeats itself, with new inventive actions becoming higher levels of understanding and skill (Forman & Hill, 1984).

But this takes time. Rothenberg (1989) reported that interest can be strengthened when children are encouraged to engage in projects that call for sustained efforts over time and provide contexts for extension, elaboration and continuation of work and play. Too often, children are only beginning to become involved in a concept when the related project is suddenly over, or changes direction radically. To test this factor, I counted the number of times students voluntary selected an activity based on our theme over a period of 6 weeks during their free choice time. The first week I observed an average of only 3 contacts with a thematic activity; this number rose in the second week to 5, but by the fifth week it rose to 8 and exploded in week sixth to 16 contacts, an increase of 400% since the first week. These children were interpreting the concept, but they needed the time to do so.

Effective teachers are trained "kidwatchers." They must constantly monitor their students' learning progress. They must know what, how, and when to observe; know the developmental stages of literacy (reading, writing, oral communication), cognitive and social development; and know what activities to provide to enhance learning growth, including instruction. Educators must be trained to use miscues as a sign of what children know and then utilize this information for curriculum development.

We must be careful not to be distracted by the public pressure for accountability. Kindergartens that stress academics through worksheets and teacher directed activities are not doing so based on current theories or research. This "Back to Basics" approach is not new. We have revisited this concept three different times (1962, 1954, 1933). In response to this issue, Keliher (1986) stated, "Why take our students backward to the 18th century style of teaching" (p. 44)? Instead, teachers must provide a stimulating and challenging environment in which children can construct knowledge and prepare for the 21st century.

An education that offers students opportunities to investigate the nature of things and arrive at explanations that are enriching to them is necessary in our highly-technological society. Children need to be capable of coming up with new understandings in the areas of natural, physical and social sciences. But most importantly students need physical (knowledge about the nature of objects) and logico-mathematical (relationship between objects) knowledge which cannot be constructed any other way than by child-initiated, spontaneous play, (NAEYC, 1991). After all, should not curiosity, creativity, consistency in study and work habits be as important as the three R's (Katz and Chard, 1989)?

## KNOWLEDGE-DRIVEN CURRICULUM

I have moved from the passive teaching style of the industrial age. My program now encourages students to ask the questions, search for the answers, and communicate their findings to a variety of audiences. This structure will enable my students to be successful in the information age. The icing on the cake is that I am learning right along with the children. Perhaps of greater importance, my classroom is now knowledge-driven. The children determine the pace of the activity. The teacher serves as their guide and directs student input and student involvement. And the teacher demonstrates skills through meaningful, non-threatening, functional and relevant contexts (Canbourne & Turbill, 1987).

A brief "tour" of a content-based classroom is presented now. Parents are invited to be involved in the creation of the learning environment. Our class florist shop was enhanced by little bonsai trees, pressed flower pictures, and collection of leaves found all over the world. When the florist shop changed to a grocery store, ads and packaging in many languages were brought to the store, and currency from different lands was used. One parent donated and showed students how to add and use an abacus. Parents also donated books, music, pictures, games and time.

Learning is no longer perceived as something you do at school; instead, it is something you do for life. We take learning out of the classroom as much as possible through field trips, neighborhood walks, and life lab gardens. I noticed the importance of this when students were drawing pictures of things that could fly. One child drew a wonderful picture of an eagle. It was a perfect replica of the U.S. Postal Service "flying eagle" he had noticed on one of our walks. He certainly was taking in information from all around him.

To build auditory discrimination students were learning how to identify 45 different bird calls. Students stopped all activity whenever a bird was singing outside and tried to identify the caller. Now students write to make meaning of what they have experienced. Students use words such as metamorphic and oviparous in their writings. Students no longer ask "How many lines do I have to write"; instead they reach for pre-made blank books. Illustrations become more detailed and accurate. They sing and chant outside on the swings. They create insects with great detail out of clay. Learning becomes a choice, not a "have to."

Now when administrators walk into my classroom, students are unaware, for they are busy constructing their own learning opportunities. It is not unusual to see students gathering information, interpreting the data and presenting their findings on tape or video, writing and sending letters to the editor (with help from a cross age tutor) on an important community issue. Ask a student what he or she is doing and you are likely to get an earful.

One evening during a class astronomy activity, a student exclaimed, "I bet these are the same 'wishy' stars that the dinosaurs saw!" This student had drawn a conclusion from two separate themes, reflected upon those experiences, found a pattern, and developed a new understanding of time. Reflecting on his statement, I realized, that I too developed new understandings as I evaluated my prior knowledge, combined it with current research, and then took time to reflect and develop new understandings of how young children learn. My students experienced success as they drew on both observation and research to achieve new understandings. They were driven by an inate hunger for knowledge. In the end, I realized that my teaching is driven by the same need. For the students and me, then, the curriculum now is knowledge-driven.

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# Kindergarten Education: Theory, Research, and Practice

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# READING AND WRITING; PIAGET'S SYMBOLIC FUNCTION AND THE FOUNDATION OF READING (PART 3)

JEANETTE MCCARTHY GALLAGHER

This is the third article in a series on Piaget's symbolic function as the foundation of reading. The focus is on the interaction between writing and reading. Too often the alphabet is overemphasized at the preschool and kindergarten levels with the hope that this skill will be the bridge to writing. This practice belongs to a copy theory of acquiring knowledge. Three deficiencies were noted: (1) such an approach places too much stress on what is observed (the individual letters of the alphabet); (2) a copy approach neglects the reflective nature of constructing words; and (3) a copy approach is too passive, for the child is not placed in puzzlement situations to ponder on the construction of words. By studying the construction of words, the teacher gains insights into the child's awareness of various sounds.

*JMG: Joey (4 1/2 years) Why don't you write some words for me?*

*Joey: I don't know how to write.*

*JMG: I bet you can. What word would you like to write?*

*Joey: Ice. Umm -- It would be "I" (prints "I" with an emphatic dot; See Figure 1) and a large "C".*

*JMG: Very good. I'm proud of you!*

*Joey: But it looks short. (Perhaps a reference to "ice cream" seen on a package.)*

*JMG: Well, it does have an "e" at the end but you can't hear it. (I print the "E" and Joey copies over it.)*

*Joey: But what about the sound that goes with "E"? Where is it?*

*JMG: (Speechless!)*

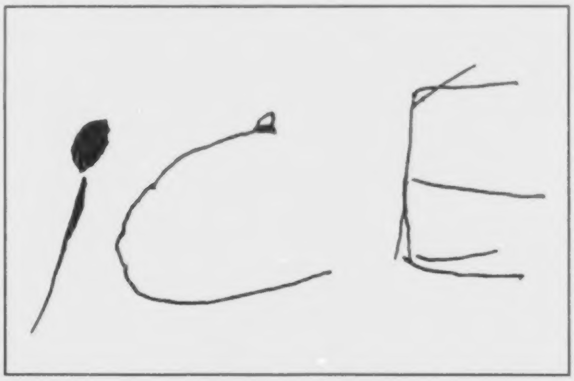

**Figure 1. *Joey (4 1/2 years) attempts to write "ice." "E" was traced.***

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Joey is joyful over the relations among letters, sounds, reading, and the activity of writing. He went on to produce "P P" for happy and "B Q" for bug. He does not know all the letters of the alphabet but is proud of what he accomplished. By asking about the missing sound of "E," he truly demonstrated an advanced awareness that letters are connected to sounds in words, indicating a firm foundation for reading.

This is the third article on Piaget's symbolic function, that is, the system that forms in early childhood to represent the world, as the foundation of reading. Recall that the aspects of the symbolic function include language (oral, written and print), pretend play, imagery and drawing (Gallagher, 1986, 1996, 1997).

In this article we probe interrelationships between reading and writing. Our main focus will be that reading and writing are parallel processes -- one does not proceed from the other. In fact, each will be viewed as reinforcing the other. In keeping with Piaget's theory, writing will be viewed as a constructive process sparked by puzzlement. We will consider how teachers may be researchers who explore their students' inventive spelling to determine levels of reading-writing interactions.

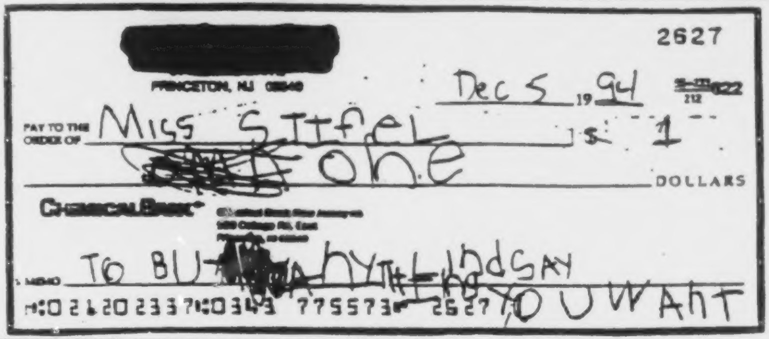
## ASPECTS OF PIAGET'S THEORY ON READING-WRITING INTERACTIONS

> *Every child has competencies, and these provide a positive base from which to start. The teacher's responsibility is to discover what they are and to help each child to extend and develop them.* (Wells, 1986, p. 133)

What has prevented the development of a curriculum based on the interactions between reading and writing? The key obstacle has been the philosophy of empiricism. Piaget and Inhelder (1969) defined the central idea of empiricism:

> *The function of cognitive mechanisms is to submit to reality, copying its features as closely as possible, so that they may produce a reproduction which differs as little as possible from external reality. This idea of empiricism implies that reality can be reduced to its observable features and that knowledge must limit itself to transcribing these features.* (p. 118)

Analyses of the effect of this stress on observable features, a copying philosophy of teaching, reveals three serious deficiencies. First, copying is not learning. It is possible to copy letters and words without attending to the process, and nothing is retained (except cramped fingers for young children). If we rely on observables, or those aspects apparent from the outer or perceptible feature, the knowledge or assimilative base (Gallagher & Wansart, 1991; Gallagher, 1997) is ignored. What a teacher needs to ask in every encounter with a child is "What does this child already know?" Relative to the activities of



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one DOLLARS

CHEMICAL BANK

MEMO TO BU [illegible] hYTh [illegible] g YOU WAnT

Lindsay

⑆021202337⑆0343 775573⑈ 2627

*Figure 2. Lindsay (K) writes a check to her teacher. "Buy anything you want."*

reading and writing, teachers need to know how much support the child receives at home. Does the child observe reading and writing? Does the child come to school with an eagerness to read and write? Has the teacher probed beyond the alphabet to determine rhyming abilities and attempts at word constructions? Does the child exhibit curiosity when other children attempt to read and write?

For example, in Figure 2 it is possible to explore the assimilative base of Lindsay, a kindergarten child (Ellis, manuscript in progress). She wanted to give Miss Stiefel, her teacher, some cash but Lindsay's mother would not permit it. The child remembered seeing her mother write checks and requested one from her mother who guided her through the process. She added the message for her teacher: "To buy anything you want."

Lindsay's construction, the writing of a check, provides the teacher with a unique view of the child's network of understanding (the assimilative base). The child has an advanced concept of money exchange and also is blessed with a supporting mother who takes time to assist the child. If Lindsay had merely copied a check that her mother wrote, the child would have been denied the opportunity to construct according to her own level of understanding. In sum, instead of a copying approach to writing, the Piagetian concept of constructing needs to be the focus. A constructive approach to learning means that the teacher investigates the assimilative base of each child to determine how much each child knows about writing and reading. Therefore, such an approach focuses on the interaction between the child's knowledge base and the environmental support from teachers, parents and peers needed to move to a new level of knowing. (See also "the child's construction of knowledge" in Robinson, 1996.)

The second deficiency of a copying philosophy as applied to interactions between writing and reading is the distinction between two levels of abstraction: empirical and reflective (Piaget, 1974, 1976, 1977a, b).

Consider the famous example of Piaget who pondered on the activities of his mathematician friend when that friend was a child. One day at the beach his friend recalled placing six stones in a circle and

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counting them clockwise and counter-clockwise. Each time he said "six." He realized that if he counted them in either a clockwise or a counter-clockwise direction the number would be the same! The mere counting of the stones was the level of empirical abstraction, that is, what was observed. However, when he reflected on the order of the stones, that is, the direction in which he counted, he advanced to a new level of thinking. His reflections led to a new understanding: order does not matter since the same number is obtained in either direction. Piaget labeled this kind of activity *reflective abstraction*, that is, the movement from observables to a reflection on those observables which leads to a higher level of knowing.

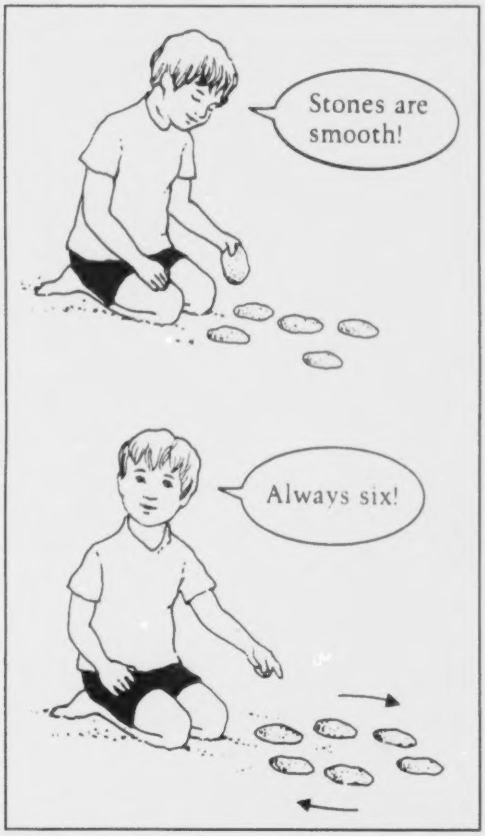
Stones are smooth!
Always six!

*Figure 3. Types of abstractions that children use to construct their understandings (Gallagher & Reid, 1983; p.28)*

The mechanics of knowing how to write letters is important for children. Drilling on the letters and repetitions of the alphabet (the observables) with endless copying does not lead to an understanding of the interaction between reading and writing. When children construct words, many reflections are involved. They need to draw interrelationships from their assimilative base: the sounds in the word, the possible memory of seeing the word in print, the letters in the word, and various rhyming words which may provide clues.

In sum, the activity of writing is a fertile field for reflecting on and interacting with the process of reading. One does not proceed from the other, but each enriches the other.

The third deficiency in a copying approach to learning is the lack of puzzlement. Recall from the previous article in this series (Gallagher, 1997) that puzzlement or disturbance is the heart of Piaget's theory (Piaget, 1975; 1980). We noted the many puzzlements as the child acquired a concept of print. The child will encounter many more puzzlements in the process of writing. Copying words provides little room for puzzlement.

Piaget stressed that puzzlements arise by various means. A major source of puzzlement is gaps in our knowledge. Recall that Joey could not understand why the "e" was not pronounced in "ice." His assimilative base does not include the interrelationships between silent letters and the construction of words. Children will ask parents, teachers and other children when perplexed about the construction of a word. What is important in this asking is to probe what the child already knows with such questions as: "Can you hear the first sound?" "Does the word you are trying to write rhyme with a word you already know?" "Would you like to try writing by yourself and we will talk about it?" When children first begin to write, these "puzzlement" questions lead to reflection and a deeper understanding of the process.

Another source of puzzlement that Piaget stressed is conflict between what is already known and a new idea or event that seems to contradict the original knowledge. The English language is full of such conflicts. Consider the beginning writer who is confronted with the various forms and uses of "read" or the letter "c" and the word "see." Interactions between reading and writing bring the child into direct confrontation with such conflicts. Each small solution leads the child to the stage of being independent in both reading and writing.

There are many other aspects of Piaget's later writings that may be extrapolated to reading and writing interactions. Robinson (1996) outlined the child's use of correspondences or comparisons (Piaget, 1992). When children construct words they are drawing upon their ability to form correspondences between their level of phoneme awareness and the production of words. Another area of research that Piaget (1987) developed in his later years was that of studying possibilities. As Robinson (1996) explained: "To consider possibilities is to look at alternatives before action and doing so contains a measure of looking ahead" (p. 19). This definition has a wealth of meaning for focusing on the process of the construction of words by kindergarten children. They have been hearing and producing sounds for five years, speaking meaningful words for perhaps four years and scribbling for four years. Their assimilative base is rich in possibilities. How dull to come to school and print the alphabet!

## THE CONSTRUCTION OF WORDS VERSUS INVENTIVE SPELLING

The reader may be puzzled why inventive spelling, that is spontaneous attempts to write, has not been mentioned. Recall a few basic concepts of Piaget's theory. Learning is a constructive process through interaction between what is known and a new understanding. Learning is not an outside-in affair wherein the teacher tells children something and it is "learned." Knowledge is constructed and not poured in or copied. The kindergarten child who constructed words in Figure 4 did not stumble by chance on labeling the drawings. A careful analysis reveals that the child was extracting from an assimilative base which is rich in the sounds of words. Perhaps most remarkable are "sicoll" for "cycle" and "Hacee" for "hockey."

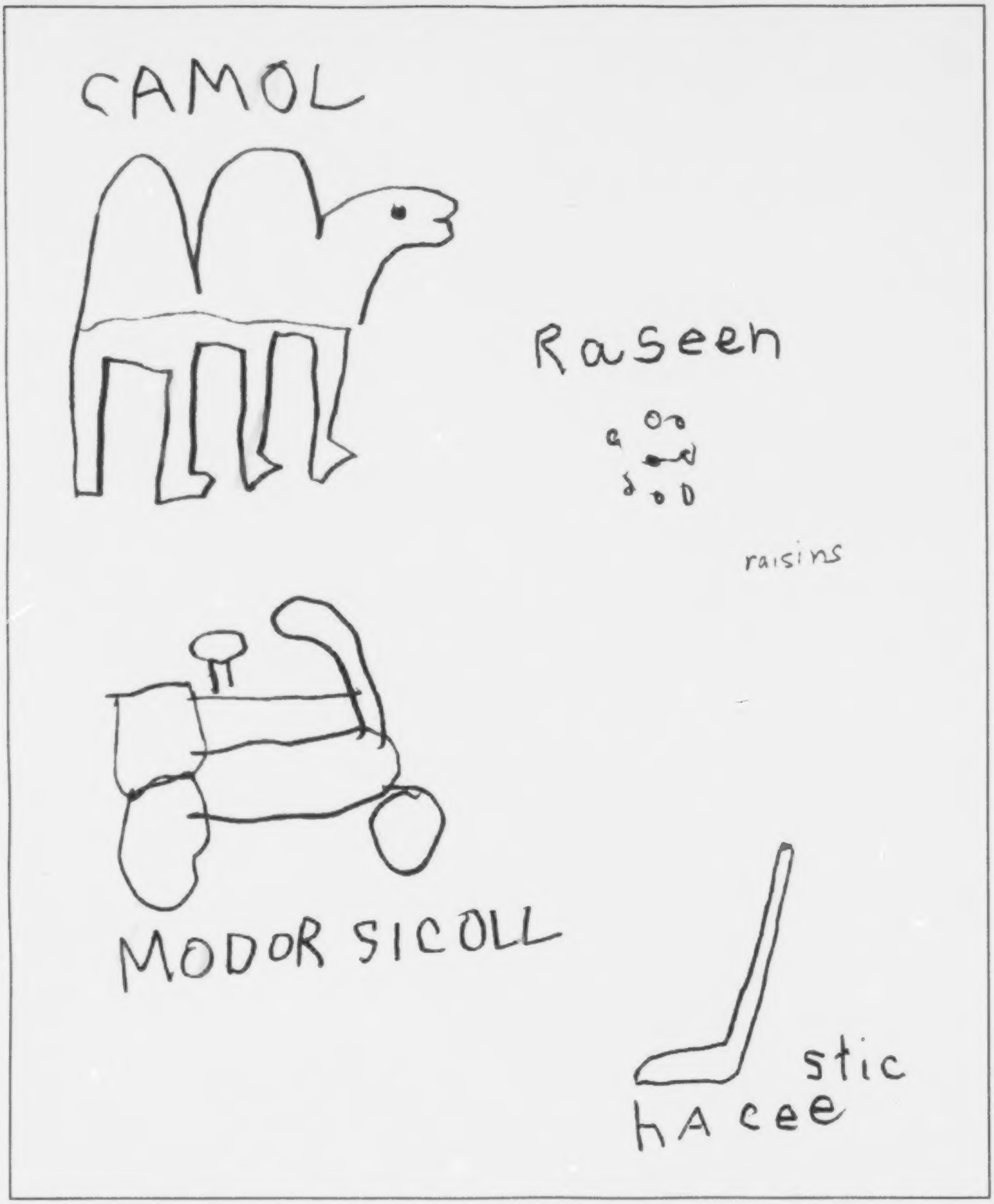

*Figure 4. Kindergarten child writes "camel," raisins," "motorcycle," and "hockey stick."*

To emphasize that a child is engaged in inventive spelling seems to imply that the child is fabricating words without any basis for the fabrication. Actually the child may be drawing from a set of interrelationships among letters, sounds and rhyming words. The constructed words in Figure 4 are "windows into the mind" (Goodman, 1979, p. 3) permitting us to examine the child's awareness of phonemes. Constant use of the term "inventive spelling" is a hallmark of a too-fast movement toward "correct spelling." Gentry (1982, p. 199) provides an important warning, especially for the kindergarten teacher: "Early overemphasis on mechanical aspects of spelling inhibits natural developmental spelling competency and growth." It may also inhibit a natural motivation to read and write, especially if a kindergarten teacher constantly corrects the child's spelling. On the other hand, the term "constructing words" places the spotlight on writing and reading interactions rather than on the observables of spelling.

Herrell (1996a) used "temporary spelling" for inventive spelling. Temporary implies something to be replaced. Our concern here is the children's constructions of words at their developmental level which provide insight into their awareness of phonemes.

When evaluating the construction of words by children, teachers need to be cautious about using stages of spelling development (Graves, 1983). The usual sequence involves Prealphabetic (scribbling and mock letters) to Sound/symbol (movement from awareness of consonants to the inclusion of vowels). If not used too strictly, knowledge of such a sequence is helpful. My observations have revealed, however, that some children revert to scribbling even though they had advanced to quite accurate construction of words. Other children place a long line of consonants in horizontal or vertical positions. Both of these activities may indicate a "playful" approach to writing and need not be labeled as regression.

## TEACHER AS RESEARCHER IN READING AND WRITING ACTIVITIES

> *...teacher researchers assume that teaching is learning. They see themselves as learners, searching and re-searching for meaning in their students' words and actions.* (Wansart, 1995, p. 169)

One of the most important tasks of a teacher is to conduct careful studies of the progress of the children in the classroom. In recent years a movement has evolved in which teachers are encouraged to be researchers by studying the competencies of their students (Bissex & Bullock, 1987; Cochran-Smith & Lytle, 1993; Lytle & Cochran-Smith, 1992; Wansart, 1995).

A teacher as a "researcher" does not mean a scientist who plans experiments and conducts statistical analyses. In the present context "researcher" is defined as someone who makes careful observations, records those observations and studies the results to gauge the strengths of each child.

The kindergarten teacher who is interested in the child's construction of words and sentences has a huge database to draw upon. These constructions provide a "window" into the child's level of competencies in reading and writing. Wansart (1995) noted: "the major focus of the teacher research described here centers on what students are *able* to accomplish" (p. 170).

As an example, Figure 5 illustrates a kindergarten's attempt to classify. The teacher used an umbrella to play a game called "What Belongs Together?" Various objects were placed one at a time by the children under the umbrella. One set of objects might be a box of cereal, a can of soup, a box of crackers and an eraser. As each object was placed the children decided if it "belonged" or not. Then a decision was made about how to name or classify the group of objects. In this case it was "food" minus the eraser. Then the teacher had the children make up their own "what belongs together?" grouping by drawing and writing.

Careful observation of Figure 5 reveals that the child has a good grasp of words that "belong together." The child's list of pets demonstrates easy word constructions (dog, cat and fish) and more difficult ones (turtle, frog and parrot) with an advanced sense of phoneme segmentation. A subtle but important observation is that some of the letters in "turtle" and "parrot" are difficult to "hear" or are silent.

Contrast the construction in Figure 5 with that in Figure 6. Here the child labels the umbrella (the group), "levng thrd" for living things. Instead of attempting to write the living things that belong in the group, the child draws an ant, a crab, a bee and a fly with printed words added by the teacher. This child may be hesitant to write and may need encouragement. The teacher as a researcher builds upon what this child has demonstrated and makes notations for future reference.

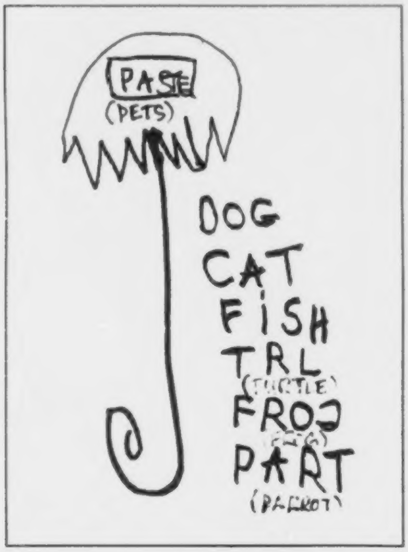

*Figure 5. Kindergarten child makes a grouping of "Pets" and writes "dog," "cat," "fish," "turtle," "frog," and "parrot."*

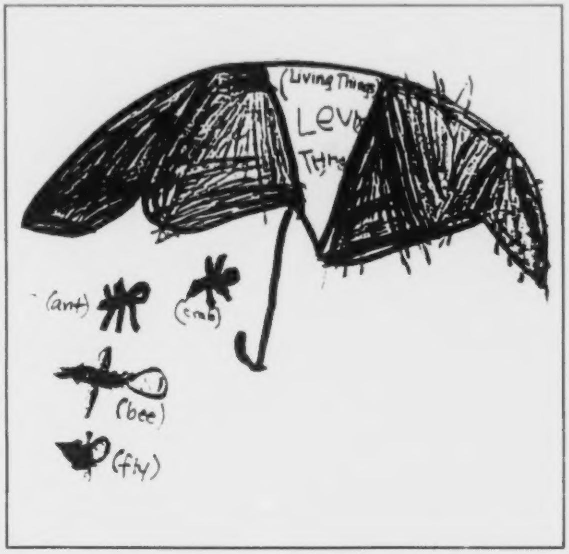

*Figure 6. Kindergarten child makes a grouping of "Living things" and draws each of the following: crab, ant, bee and fly.*

The new kindergarten teacher may be overwhelmed with the wide variety of levels of competency the children display in their attempts at writing. Some children only want to scribble and/or draw, others write the first letter of words, some are competent at constructing words and sentences, and some may be reading and writing at an advanced stage. It is the teacher's challenge to note the abilities or assimilative base of each child and to proceed from that base. Research is work!

The observations of the teacher researcher need to be placed in some systematic order for future reference. The need for the compiling of individual portfolios was outlined by Herrell (1996b) in a previous issue of this journal. She stressed how portfolios aid in communicating with parents. A point to be added to Herrell's article is the function of the teacher researcher as a positive force, that is, someone who focuses on what the child is able to do, the assimilative base, rather than on what the child lacks. This positive approach sets the stage for fruitful dialogue at parent-teacher conferences.

Roskos & Neuman (1994) prefer the term "literacy album" to that of "portfolio." An album contains samples of a child's drawings and writing attempts such as labeling a drawing. Also included are parent reports like the number of times a week the parent reads to the child. Missing in Roskos & Neuman's graphic of a parent report is a place to indicate how often the parent interacted in writing activities such as making grocery lists, "writing" to grandparents, and making a list of favorite foods.

In sum, the teacher researcher needs to be a careful observer of what the child can accomplish. These observations (empirical abstractions) need to be recorded in a systematic manner. The teacher then studies the observations to arrive at conclusions (reflective abstractions). Finally, the strengths of the child's abilities are communicated to the parents.

## THE USE OF THEMES IN READING AND WRITING ACTIVITIES

> *My children...had no idea why they needed to know the letter A or B or anything else, for that matter. They all knew how to read and write the entire alphabet. However, when I asked them to write a letter to their new pen pals, their response was "I can't write." They sat in front of their papers feeling lost and frustrated.* (Kuball, 1995; p. 6)

This comment by a new kindergarten teacher shows the need for understanding the core of Piaget's theory: children learn by being *active,* not passive, learners. This does not mean perpetual "busyness" or how many activities can be crammed into one day. Recall the emphasis on *constructing* words as the beginning of the interaction between reading and writing. Writing becomes an active approach to learning how to read, for it requires the child to reflect on various sounds in a word, the memory of the word, and the letter sounds and shapes. During this construction process, the child probes her assimilative base (what is known) to form relationships in the activity of forming words.

The construction of words is facilitated by setting the activity within a theme (Gallagher, 1997). The themes need to be related to the child's social experiences at home and in the community. Themes such as American Indians or Egyptian mummies would be inappropriate because the words related to these themes would probably not be part of the child's experience.

Katz (1997) described a very successful experience relating reading and writing in a theme based on a post office setting. After the teacher had read *"A Letter to Amy"* (Keats, 1994), the children visited the local post office. After these activities the children decided to build a post office in the corner of the classroom. With the help of parents, counters, boxes, mail slots and "stamp machines" emerged. These areas of the post office were labeled with signs the children made. The children wrote letters to parents, grandparents, pen pals in other classrooms, and friends they had in other schools. Many other activities extending over a period of six weeks were associated with the mailing of these letters:

- Drawing and labeling stamps
- Making money to buy stamps
- Placing stamps
- Writing addresses
- Canceling stamps
- Making a mail truck out of a wagon and marking it "U.S. Mail"
- Making a pouch to deliver the mail
- Drawing and labeling the child's mailbox at home

In all these activities rich interactions between reading and writing flourished. Other themes which would be part of a child's assimilative base and fruitful for writing and reading activities could be a grocery store, a zoo, a farm, or a bakery.

A key feature of themes that are familiar to children is the powerful social interaction that emerges. Waring-Chaffee (1994, p. 53) reflects on the social context of children's emergence as readers and writers: "Although on numerous occasions individual children engaged in literacy events without direct contact with others, it was clear that the social environment of which they were a part legitimized their exploration and encouraged it by sharing and celebrating their growth as readers and writers."

Parents are also central to the child's social environment of learning. When familiar themes are used, opportunities to involve parents are numerous as activities could be continued at home. The letter to parents at the end of this article provides suggestions for such involvements.

## CONCLUSIONS

Writing activities have long been viewed as "what comes after reading." The view stressed in this article is that writing and reading interact at every step. Most children come to kindergarten with eagerness to learn to read and write. By selecting themes with rich social contexts, teachers provide the environment for reading and writing to flourish.

The term "inventive spelling" has been overused. Each child's construction of words needs to be respected for its uniqueness. Not to respect the production is similar to knocking down a child's tower of blocks because the teacher finds it to be in the way.

In the next article in this series, interrelationships among drawing, reading and writing will be explored within a Piagetian context.

## LETTER TO PARENTS

Dear Parents,

As you probably are aware, your child has been encouraged this year to try to write words in a very informal way. This approach is important because writing and reading activities can proceed hand-in-hand. By trying to write words, your child has to ponder on the sounds in individual words. This is good practice for learning sounds which assist in reading.

I hope you will be able to encourage your child to write. At first, don't be surprised if scribbling occurs. As your child forms words, you will notice that often they are misspelled. Try not to correct your child too often as this may discourage her or him. You may notice that the consonants are often written before the child inserts vowels. For example, it would not be uncommon for a child to write "MLK" for milk because the sound of the "I" is not prominent. By looking at the misspellings you will be able to tell whether or not your child is aware of differences in sounds of letters and parts of words.

I try not to drill on the alphabet. This is confusing to children because letters are the smallest unit of reading and writing. It is better to let children "play" with words and then informally learn the alphabet.

There are many fun things you can do at home to encourage writing. Let your child make up a grocery list and take it to the store. Your child can make a list of favorite foods. After reading a story to your child, perhaps a picture could be drawn and labeled. Children like to make "books" by putting a few letters on each page, pasting the book together, and "reading" the story. Such activities help children grasp the relationships between reading and writing.

In our classroom the children want to build a post office. Encourage your child to write to grandparents and other relatives. Perhaps these "letters" will be pictures with a few words. The goal is to make writing fun.

I am looking forward to meeting with you to talk about the fun activities you are doing at home.

Sincerely,
Your child's teacher

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# WEARING MANY HATS
# OR
# HOW KINDERGARTEN TEACHERS ADORN THEIR HEADS

CANDACE KAYE

This article examines early childhood theoretical "hats" that are possible choices for a kindergarten teacher to wear in the United States. The "hats" represent major theoretical perspectives for early development and education. It is suggested that, through an examination of how these "hats" are translated into classroom practice, a vital and enriched kindergarten experience can become more of a reality. The discussion concludes with examples of how each theoretical hat can become visible in the practice of quality kindergarten teaching.

As kindergarten teachers, we are never hatless in the classroom. We even describe ourselves to others as "wearing many hats." The ideal of this many-hatted condition is to wear the hats one at a time. However, the reality is that we are often wearing the green eyeshade of the accountant for all the paperwork, while at the same time adorning ourselves with the scholarly mortarboard for our curricular, theory - to - practice planning. In addition, we balance both of these foundational head dresses with a jester's cap for playfulness, a nurse's hat for physical emergencies, and a safari helmet for the great unknown adventures that are part of our daily journey into all the uncharted territories found in the classroom.

This article will not discuss those hats. Rather, it focuses on some of the theoretical hats that we can choose to wear as kindergarten teachers, as we engage in curriculum planning and in teaching. These hats represent (a) what we know and understand about the development of children and (b) how we put this understanding and knowledge into daily practice. I will describe some of the hats that I consider important and conclude the discussion by suggesting opportunities for making each hat visible in the practice of child-centered kindergarten teaching.

To set the stage, I would like to introduce a suitcase containing hats worn by Jean-Jacques Rousseau, John Dewey, Jean Piaget, Lev Vygotsy, and Howard Gardner. This selection process represents what Paolo Freire (1970) could be referring to when he spoke of education as "the practice of freedom" (p. 69). He speaks of a liberating practice of

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education as the opportunity for authentic reflection, constant inquiry, and reaffirmation within "the process of becoming" (p. 72). As kindergarten teachers, we daily decide on what theories to wear in our classrooms to adorn our thinking as we facilitate the learning of our students. Perhaps we would find a letter from Freire (1996) in the suitcase such as the following that describes this process:

> Dear Teacher of Young Children,
>
> *Never does an event, a fact, a deed, a gesture of...love, a poem, a painting, a song, a book, have only one reason behind it. In fact, a deed, a gesture, a poem, a painting, a song, a book are always wrapped in thick wrappers. They have been touched by manifold 'whys.' Only some of these are close enough to the event or the creation to be visible to the 'whys.' And so I have always been more interested in understanding the process in and by which things come about than in the product in itself.* (p. 16)
>
> Your friend,  
> Paolo Freire

It is my hope that the reading of this article will lead to a further understanding of the "whys" underlying the teaching-learning process and a growing awareness of how our theoretical "heady" adornments enrich practice in kindergarten classrooms. Let us now examine each hat in more detail.

### *Jean-Jacques Rousseau*

The theoretical chapeau of Rousseau is the first hat in the suitcase to be examined. In his book *Emile* (1762), Rousseau pioneered the organized study of children by exploring their need for an active involvement with the environment. Rousseau advanced the idea that children are inquiring human beings who are able to develop and to learn through their interaction with the environment. As a result, he spoke of childhood as a uniquely important time for development, describing both the characteristics of different ages and appropriate education of each.

In his discussion of childhood, Rousseau also pointed out what children were not: They were not the *tabula rasa* or "blank slate" children described by John Locke at about the same time in England, able only to receive messages from the environment as passive beings. Additionally, they were not the miniature adults of Renaissance thought, nor "things" to be abandoned, if not of use economically, as they had formerly been considered. (We shall see Rousseau's view reflected in the theoretical work of John Dewey and Jean Piaget, who are also represented in our suitcase.)

### *John Dewey*

Dewey's hat is important. It has two feathers in its brim - the beginnings of progressive education and the child study movement in the United States. Dewey examined the work of Friedrich Froebel who had

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advanced the ideas of Rousseau's early education in the development of the first kindergarten in Germany in 1837. According to Wortham (1992), "Froebel embraced the active nature of learning and saw play as the educational method whereby the child's inner power could be released" (p. 8).

Dewey believed in the same need for firsthand experiences for young children as Froebel had introduced with his kindergarten concept. However, as a progressive educator, Dewey, along with G. Stanley Hall and others, demonstrated the need to study how better to develop appropriate child-centered curriculum within a community-building environment, rather than in teacher-initiated lessons with prescribed imitation activities for the child as Froebel's curriculum had advocated. In rejecting imitation as a prescription for curriculum, Dewey (1900) stated:

> *From the psychological standpoint it may safely be said that when a teacher has to rely upon a series of dictated directions, it is just because the child has no image of his own of what is to be done or why it is to be done. Instead, therefore, of gaining power of control by conforming to directions, he is really losing it – made dependent upon an external source.* (p. 151)

We can also nod our head in agreement when wearing our Dewey hat as we read about his understanding of play, a needed center of kindergarten curriculum planning. He (Dewey, 1900) stated:

> *It [play] brings the child in contact with a great variety of material: wood, tin, leather, yarn, etc.; it supplies a motive for using these materials in real ways instead of going through exercises having no meaning except a remote symbolic one; it calls into play alertness of the senses and acuteness of observation; it demands clear-cut imagery of the ends to be accomplished, and requires ingenuity and invention in planning; it makes necessary concentrated attention and personal responsibility in execution, while the results are in such tangible form that the child may be led to judge his own work and improve his standards.* (p. 149)

In this desire to continue exploring his democratic processes for young children, Dewey established the Laboratory School at the University of Chicago in 1896. Discussing Dewey's purpose in establishing this school, Wortham (1992) noted:

> *Dewey's goal was to develop a school that could become a cooperative community while developing individual capacities at the same time. Life and its occupations should provide the basis for education, with the main test of success being the ability of individuals to meet new social situations through thoughtful action.* (p. 16)

Dewey's ideas are still actively being pursued by those working in the Laboratory School, such as Vivian Paley, author of books such as *You Can't Say You Can't Play* (1992). Paley explores the social and moral dilemmas of the kindergarten classroom and in this particular work defines the needed role of the teacher to uproot the first weeds of exclusion in the classroom society. In finding her solutions to the dilemmas, Paley's thinking continually returns to Dewey's concern for the importance of developing democratic group processes in early education. Such a concern is expressed when Dewey (1916) wrote: "A democracy is more than a form of government; it is primarily a mode of social living, of conjoint communicated experience" (p. 101).

### *Jean Piaget and Lev Vygotsky*

It is possible for us to wear the hats of Piaget and Vygotsky at the same time, while also enjoying their individual uniqueness, one at a time. The mutuality of their theories concerns the language of kindergarten children. That is, both Piaget and Vygotsky argued that in infancy, a human's language and thought begin their developmental processes independent of each other. By the age of two, they have become more closely related. In their theories, Piaget and Vygotsky described two-year-old thought as an increasingly verbal expressive process and language usage as an intentional practice to influence behavior.

Piaget and Vygotsky can be viewed as complementing each other, thus making it easier to wear both hats at the same time. In relation to this notion, Glassman (1994) stated that within both theories:

- There are two lines of development - natural and social - that interact continuously in the development of children's thinking. Both are important. Both need to be considered to understand cognitive change.
- Children are able to mentally transform their experiences through internal reflection.
- These major transformative changes in thinking can be identified by qualitative changes.
- The course of these changes is influenced by the social milieu.

### *The Separate Hats of Piaget and Vygotsky*

As we have just seen there is a great deal of mutuality between Piaget and Vygotsky's theories related to the early development of children, including the idea that children are biological organisms. There was also mutual respect expressed by the theorists for each other's work. Berk and Winsler (1995) discuss this "meeting of the minds" (p. 108) and remind us that Vygotsky gave credit to Piaget for giving him food for thought on his theory of self-directed speech. Similarly, Piaget, in responding to Vygotsky's critique on his ideas of egocentric speech, placed value in Vygotsky's study of thought and language.

The two theorists differed in how the developmental process continues, particularly after the age of two.

It is easy to argue about these differences, especially as we search to discover how children learn literacy. Their separate views of the roles of language in cognitive development are explained by Berk and Winsler (1995):

> *According to Vygotsky, language, in the form of private speech, is the centerpiece of development - the pivotal means through which culturally adaptive cognitive strategies are transferred from the social to the psychological plane of functioning.* (p. 99)

> *In contrast, Piaget viewed language as a secondary, emergent phenomenon - as an outgrowth of the sensorimotor activity involved in infant's and young children's independent exploration of the physical world. Private speech was seen as a symptom of the preschooler's immature, egocentric, nonsocially adapted thought; it served no positive, adaptive purpose in the life of the young child.* (p. 100)

Other differences between the theories of Piaget and Vygotsky include the roles of play and instruction in the development of cognitive structures. These differences are discussed in the following sections on Piaget and Vygotsky. The discussion of Vygotsky's theory also includes an elaboration of his stages of speech development.

**Piaget's hat.** Piaget examined what occurs within the young child that leads to changes in cognitive processes. Piaget theorized that instruction can refine and improve inner cognitive structures/schemas/concepts, if these processes have already emerged within the individual child's intellectual development. He also set forth the idea that children everywhere move through a series of four stages in this cognitive transformation: sensorimotor, preoperational, concrete operational, and formal operational.

Particularly during the preoperational stage, Piaget regarded play as the dominance of assimilation over accommodation within a young child's psychological adaptation to the environment. The concept of play as the dominance of assimilation over accommodation means that through play, children are able to integrate new thoughts into their existing cognitive structure/schemas/concepts (assimilation) without altering previous mental structures (accommodation). There are clear implications here for teachers of young children. For example, when Sam "makes" a block into a car, he is using the concrete object (block) to conform to his mental idea (car), rather than changing his thinking to conform to the object and having this object stay a block of wood. It is a car for Sam.

Additionally, Piaget found that play consolidates newly learned behavior. That is, through play, children can repeat new learning until it is consolidated into established mental constructs. Such symbolic play of kindergarten children has multiple possibilities for facilitating significant learning experiences as children connect physical and mental activities of previous learnings with new ideas within the child-centered environment. Thus, children are able to express flexibility, adaptability, and creativity as they become intellectually sophisticated through play. Piaget saw the process of play as a necessary part of intellectual development for the young child - a process for the intellect to continue to adapt more sophisticated strategies to its repertoire. In our classrooms, with our encouragement of the manipulation of real objects, the daily use of symbols of language, the use of imagery in making meaning for the world of the child, we are wearing the quite playful beret of Piaget!

**Vygosky's hat.** Vygotsky ([1934] 1986) states in *Thought and Language* that the cognitive transformation of children's thought takes place at two important times: (a) at about two when children are able to communicate linguistically and (b) when instruction occurs that helps children give meaning to their own thoughts.

Vygotsky examined how the social environment causes changes in children's thinking and theorizing and how the pace of an individual's development can be influenced by the social environment. According to Vygotsky, instruction, including the instruction that the social environment offers, can lead to the development of cognitive structures/schemas/concepts.

Our use of developmental curriculum connects us with Vygotsky. His emphasis on the collaboration of the social environment, support from expert partners, and the activities of children leads us to familiarity with his concept of the zone of proximal development (ZPD or sometimes called, ZOPED). Vygotsky's theory of ZPD is defined by Berk and Winsler (1995) as "the distance between what an individual can accomplish during independent problem solving and what he or she can accomplish with the help of an adult or more competent member of the culture" (p. 171). This approach to learning means the environment supports the concept that learning can lead development. As Dixon-Krauss (1996) explains:

> *Instruction within the zone of proximal development begins with the Vygotskyian idea that the path of learning is from social interaction to internalized independent functioning. It is an ongoing progression from other-regulated to self-regulated performance. Social interaction provides the context for guiding the child's learning. During instruction, the teacher mediates or augments the child's ability to perform various learning tasks by providing guidance and support primarily through social dialogue.* (p. 15)

Vygotsky also examined and elaborated the development of speech, which is so important for teachers of young children. The first stage of speech - social or external - does not occur until about two. He described this as speech to control behavior of others and to express thoughts and emotions. Those of us who have been around twos can attest to this...particularly the powerful word, NO!

Vygotsky described the next stage as the development of egocentric speech, prominent in young children's development between the ages of three and seven. The development within these four years is the bridge, Vygotsky says, between social and inner speech that begins at about seven years of age. This important span of four years includes both the preschool and kindergarten years. According to Vygotsky, this time serves children's acquisition of control of their own behavior through expressive language. Those of us involved with the intricacies of providing appropriate classroom experience for all our children, with all their levels of language understanding represented, must keep this sense of Vygotsky and speech on and in our heads.

According to Vygotsky ([1934] 1986), the inner, soundless speech beginning at age seven—that stream of self-talk or stream of consciousness that directs our thinking and behavior for the rest of our lives—is the source of all higher mental functioning. For our kindergarten children, the magical year of first grade is when this emergence of inner speech becomes inner language and the product exemplifies success in developing concepts for learning in school. In other words, Vygotsky saw this self-regulatory inner language as first a self-talk or private speech in the preschool years, developing into inner speech or internalized thinking at about the age of seven. We can see this in the kindergarten classroom when a child is processing a difficult task and is verbally sequencing the process. For example, in the block area, our Sam is saying, "I will build a road for my car to get on the freeway. I want to put the street next to the freeway. I'm going to make it so my car doesn't get in an accident. I want to put a light...". By the time Sam leaves us for first grade, this speech will be less audible as he internalizes the process.

### *Erik Erikson*

I like to wear Erikson's hat, because he provides a general framework in the kindergarten classroom for interpreting major changes that children are experiencing, particularly within the social environment. Concerned with a healthy personality, Erikson described human development in terms of how children adapt to the social environment, specifically eight conflicts that need to be resolved throughout the life cycle of each human being. The first of these kindergarten-age crisis resolutions is that of autonomy vs. guilt. According to Erikson, with language ability, physical movement, and active imagination, children are able to discover their sense of self, have a greater sense of initiative, and thus become more responsible for their behavior. It is at this stage that they appear at our kindergarten door. Consequently, it is our awesome task, should we accept it, to continue to develop this sense of self and responsibility. We often call this "being responsible for your own behavior."

The other Erikson phase that we see in the kindergarten year is the child's need to demonstrate competence. We, as their teachers and guides, offer our children multiple opportunities for success in meaningful activities. We constantly reassure them in our supportive environment that they *can* take risks when solving problems and gaining mastery. They want to be some ONE, as viewed by peers and defined by exploration of the child's culture - both the one at school and the one at home. Erikson calls this crisis resolution: industry vs. inferiority. In other words, children are industrious about this exploration, and, with our help as teachers, they will not come to the end of this first year of formal schooling with a feeling of inferiority. Instead, through this inner drive of industry, they will develop a sense of selfworth because of all the exciting social connections, proving indeed some one lives, leading to the powerful feeling of "Here I come, First Grade!"

### *Howard Gardner*

Gardner's (1983) hat could have seven points representing his original idea of multiple intelligences (or MI) - linguistic, musical, logical-mathematical, spatial, bodily-kinesthetic, interpersonal, and intrapersonal. In these multiple intelligences, Gardner describes the different ways that intelligence can express itself. Each of these modes has the result, as Bruner (1986) says, of "minds which become specialized to deal in verbal or mathematical or spatial forms of word making, supported by symbolic means provided by cultures which themselves specialize in their preference for different kinds of worlds" (p. 103). These multiple intelligences are represented in our kindergarten classroom by our learning centers. Gardner (1995) reflects this approach when he states:

> *I have always believed that the heart of the MI perspective- in theory and practice - inheres in taking human differences seriously. At the theoretical level, one acknowledges that all individuals cannot be profitably arrayed on a single intellectual dimension. At the practical level, one acknowledges that any uniform educational approach is likely to serve only a minority of children.* (p. 209)

Here are some examples of activities based on the seven modes that we naturally plan to help children construct meaning of their world.

- the linguistic mode - the language experiences in group time, the library, the storytelling;
- the musical mode - the songs, the available variety of musical instruments;

- the logical-mathematical mode - the number games, the counting, the cause - effect activities, the problem-solving;
- the spatial mode - the puzzles, the blocks;
- the bodily-kinesthetic mode - the physical games, the creative movement;
- the interpersonal mode - the dramatic play, the group time;
- the intrapersonal mode - solitary exploration, reflection times.

Gardner continues to revisit his theory of multiple intelligences in order to inform us of his most current thinking. For example, he has added a naturalist intelligence to the original seven points, so we can now see our science center as being informed by the MI's. In 1994, he proposed that the three most positive ways we can use his theory are to:

- Cultivate capabilities that are valued in the community and a larger society than school - music, art, for example
- Approach concepts and subjects in a variety of ways.
- Personalize education.

### *A Synthesis of the Theoretical Hats*

As we contemplate how best to teach young children and prepare them for lifelong success, let us briefly review our theoretical and pedagogical options as represented by the contents of our suitcase:

- Rousseau and Dewey gave us hats for child-centered active learning.
- Erikson helped us understand the social development of children
- Piaget and Vygotsky challenged us to understand how children learn.
- Gardner encouraged us to continue to look at the multiple ways of knowing.

Many more hats could be considered. Indeed, our heads would probably become a trifle tender if we wore all of them at one time. Instead, we can mix and match, picking what best suits the needs of our students and our own style.

### *Practical Use for the Hats*

So how can we put the theories behind these creative and important hats to practical use in our classrooms for the lifelong benefit of the children we teach? Let us take a brief overview.

#### The Hat of Rousseau in the Classroom.

1. The teacher is a reflective practitioner.
2. The environment is an interactive and exploratory space.
3. The young child is viewed as having specific developmental needs that are different from those of an adult or older child.

**The Hat of Dewey in the Classroom.**

1. "Learning to do by doing" is our motto.
2. The child and the curriculum are equally important.
3. Responding to the works of Paley in the social world of our classroom allows us to be reflective practitioners in the building of a democratic environment.

**The Hat of Piaget and Vygotsky in the Classroom.**

1. Our knowledge of how young children learn can help enhance the importance of opportunities for social construction.
2. Learning and development are interconnected.

**The Hat of Erikson in the Classroom.**

1. The social development of children at kindergarten age is crucial.
2. What children bring to school from their homes must be a part of the knowledge and understanding of the teacher, so he or she can help the child develop a strong self-concept. An important part of the kindergarten year is the development of self-worth.

**The Hat of Gardner in the Classroom.**

1. There is more than one way to learn.
2. We need to take into consideration the many ways of constructing meaning when considering classroom planning - the multiple intelligences.

## WEAR THESE HATS PROUDLY!

These Hats - this chosen wardrobe of theoretical hats - they sparkle; they are comfortable - a fit of theory and practice - and flexible in their ability to change and to relate to each other. As I do, you will continue to have personal experiences, study, and reflection to enhance the use of the theories of Rousseau, Dewey, Piaget, Vygotsky, Erikson, and Gardner in your daily practice.

An additional inclusion in the wardrobe will be your selection of a cultural hat. The chosen adornment represents your own journey of study and reflection concerning the issues and gifts of culture that are an integral part of daily experience with the diversity of children in the kindergarten classroom. For example, building the supportive structure between home and school for each child is just one of our cultural obligations and privileges as kindergarten teachers.

All of these hats are valuable to teachers. Wearing them enables us to enrich the education of young children, thus fulfilling the dream that Freire (1996) expressed when he wrote:

> *They (the community) dreamed of an open, democratic education, one that would instill in their children a taste for questioning, a passion for knowledge, a healthy curiosity, a joy of creating, and the pleasure of risk without which there can be no creation.* (p. 140)

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# CROSS-CULTURAL PEER INTERACTIONS IN A TWO-WAY BILINGUAL IMMERSION KINDERGARTEN CLASSROOM

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The purpose of this naturalistic study was to examine peer interaction of twenty-nine Anglo and Latino kindergarten children enrolled in a two-way bilingual immersion program. The study addressed three basic questions: To what extent do kindergarten children enrolled in a two-way immersion bilingual program interact with same- and cross-ethnic peers? To what extent do these kindergarten children interact with same- and cross-gender peers? What structural and organizational elements, including activities, of classroom life encourage cross-ethnic peer interactions? The hypothesis that cross-cultural friendships would be observed in the two-way kindergarten classroom was not supported. Cross-cultural peer interaction, however, was observed in some situations. During the free choosing time, many more cross-ethnic and cross-gender interactions occurred. Structuring the kindergarten school day to include more opportunities for free play may yield more cross-ethnic and cross-gender interaction.

About half of the nation's school age population will be students of color by 2020 (Banks, 1993; Pallas, Natriello, & McDill, 1989). The increasingly diverse student population poses challenges as well as opportunities. An important goal of education in a pluralistic society, as Banks (1993) noted, "should be to help students of all racial and cultural groups to develop bicultural racial attitudes and behavior rather than in-group racial preferences" (p. 241). Monolingual and bilingual classrooms present different challenges in relation to achieving this goal. Ramsey (1995) advised that teachers in monolingual classrooms consisting of homogeneous groups of middle-class White children must prepare children to live "in a diverse world that may seem very distant to them" (p. 18). Teachers in bilingual classrooms must help children negotiate differences among cultural and linguistic patterns of social in-

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teraction such as play behaviors and conversational styles.

How do we help children develop bicultural attitudes and behavior? One means may be the two-way bilingual immersion programs. Although there are relatively few two-way programs in the United States, they are becoming more common (Christian, 1994; Collier, 1995b). In these programs, English and, for example, Spanish-speaking children learn two languages in order to promote bilingualism in both groups. Bilingual education advocates argue that two-way programs offer important benefits both to language-minority and language-majority students. For example, studies have found that 2-way programs help promote bilingualism among language-majority students without sacrificing their achievement in the majority language; for language minority students, two-way programs also help promote higher levels of achievement in the home language and in the majority language (Cazabon, Lambert, & Hall, 1993). The goal of two-way bilingual programs, however, is not only to promote bilingual competence among children but also to promote positive social relations and peer friendships across language and ethnic groups.

Researchers and educators note that more attention should be focused on the extent to which children make friendship choices from different racial and cultural groups (Banks, 1993; Corsaro, 1994; Deegan, 1996; Ramsey, 1991). Deegan (1996) noted that "the importance of children's friendships in culturally diverse contexts has immediate and enduring significance for the social well-being of children and society" (p. 14).

The two-way bilingual immersion classroom is a culturally diverse context, but only a few studies have been conducted in such classrooms, most of which focused on academic achievement. One study (Cazabon, Lambert, & Hall, 1993), which is reviewed later, assessed children's friendship choices but only by sociometric procedures. The present study was designed to obtain more complete data through observation. The purpose of this research was to observe and examine cross-cultural peer interaction in a two-way immersion bilingual kindergarten program for English- and Spanish-speaking children.

Previous research has identified factors that influence children's peer relations in school settings. Among these are the following factors, which are included in the present study: ethnicity, gender, and classroom organizational and structural elements. A review of the previous research on these factors is presented below, followed by a review of the several studies conducted in two-way immersion programs.

### *Factors Influencing Children's Peer Relations and Friendship Formation in School Setting*

**Ethnicity.** Research studies of children's choices of classmates have analyzed patterns of same-ethnic preference in racially mixed classrooms (Howes & Wu, 1990; Ramsey, 1982, 1983, 1987). Ramsey (1987, 1995) noted that few studies on children's actual behaviors with same- and cross-ethnic peers have been conducted and that the findings of those studies present a mixed picture. Some studies suggest that young children, particularly kindergartners, show marked same-ethnic preferences (Finkelstein & Haskins, 1983; Howes & Wu, 1990; Ramsey & Myers, 1990), whereas other studies report few signs of cross-ethnic avoidance (Porter, 1971; Singleton & Asher, 1977, 1979; Urberg & Kaplan, 1989). It has been noted that White children in ethnically diverse school settings prefer to play with same-ethnic peers more often than children of other ethnic groups (Howes & Wu, 1990; Ramsey & Myers, 1990). However, in a study with African American, Latino, and Anglo preschool children, more same-ethnic preferences were formed among the Latino and African American children than among the Anglo children (Lederberg, Chapin, Rosenblatt, & Vandell, 1986).

Some researchers suggest that children's same-ethnic preferences become more consistent and elaborated during the elementary school years (Asher, Singleton, & Taylor, 1982; Goodman, 1952; Katz, 1976; Milner, 1983; Porter, 1971; Schofield, 1981, 1982). Ramsey (1991), along with some researchers (Aboud, 1987; Schofield, 1981), maintains that "racial segregation often becomes more pronounced during the elementary school years as children develop stronger racial identities and affiliations" (p. 56). However, Howes and Wu (1990) noted that third graders played more with their cross-ethnic peers than did the kindergartners, suggesting that the occurrence of ethnic cleavage is not certain in culturally diverse settings.

**Gender.** In all of the studies cited above, gender was found to be the strongest barrier to friendship. Singleton and Asher (1977) investigated peer preferences and interaction among African American and White third grade children. The results indicated that the children were more likely to interact with cross-ethnic rather than cross-gender peers. Urberg and Kaplan (1989) conducted an observational study of preschoolers and found that the children interacted most often with same-sex play partners. Schofield (1981) concluded that, although previous research tells us that ethnicity and gender are strong barriers to friendship and that gender is generally a stronger barrier than ethnicity, "such research generally does not address questions such as why this is so, how children interact with out-group members when situational constraints require that they do so, and whether such interaction lays a basis for the development of friendship at some future date" (p. 54).

Other research studies (Paley, 1984; Thorne, 1986, 1993) have focused on the questions that Schofield (1981) highlighted. One teacher's study (Paley, 1984) of gender differences among kindergarten children noted more cross-gender interactions among the children when she extended the time allotted for free choice activity time. She described the separation of girls and boys in her classroom and noted that the daily schedule affects the type of activities the children choose:

> *The boys begin most play periods on the floor with things that go fast, make noise, or rise up high. Table activities are postponed for fear time will run out before they have played enough. If a free period lasts sufficiently long, the boys will drift over to the tables, ready to sit down and make something. The biggest problem may be that I seldom allow free play to extend to that point.* (p. 30)

Although the teacher changed the daily schedule, same-gender play was still more frequent than cross-gender play interactions.

Thorne (1986, 1993) conducted ethnographic investigations of cross-gender peer interaction among school-age children and found that chasing games on the playground support school-age children's cross-gender interaction. Her research studies indicate that children are more likely to engage in cross-gender interaction when mixed-gender groups were formed by their teachers and they were engaged in high interest absorbing learning tasks.

**Organizational/structural factors**. Structural and organizational elements have been studied as to their effect on children's friendships (Hallinan & Teixeira, 1987a, 1987b; Schofield, 1995; Singh, 1991; Slavin, 1995). A number of interventional studies have been conducted to promote intergroup relations, and these studies have yielded encouraging but mixed results. Only a few studies have examined the teacher's role in promoting positive cross-cultural attitudes among children (Banks, 1995).

Classroom instructional strategies in the upper elementary, middle, and secondary classrooms, such as racially integrated cooperative learning teams, have had a positive effect on interracial friendships (Banks, 1993; Rosenfield & Stephan, 1981; Schofield, 1995; Slavin, 1995). Hallinan (1979) investigated the relationship of open and traditional school environments and cross-gender peer interaction among middle school children. Her findings suggested that "structured classroom settings might be more conducive to successful racial integration than open classroom arrangements" (p. 53). However, these studies have been largely conducted among older children in the upper grades of elementary school or in the middle school and secondary school environments.

Structural and organizational elements are also believed to have an impact on preschoolers' and kindergarten and primary grade children's friendships (Bianchi & Bakeman, 1978; Corsaro, 1981; Paley, 1984; Rizzo, 1989). Bianchi and Bakeman (1978) studied preschool children enrolled in "open" nursery school environments, in which 80% of the children's time was spent in free play, as well as children enrolled in a more traditional teacher-centered program. They found that cross-gender peer interaction occurred more often among children enrolled in the "open" nursery school environment. As mentioned earlier, Paley (1984) found that extending the free choice activity time in her kindergarten classroom increased cross-gender peer interaction. In Rizzo's (1989) study the children's peer interactions were influenced by seating arrangements and ability groupings for instruction. He noted that similar peers were given more time with each other to interact in the classroom than were dissimilar peers. Corsaro's (1981) study of interactions of preschoolers highlights the way in which young children act upon their environment developing rules and rituals to negotiate friendships.

### *Peer Relations and Children's Friendships in Two-Way Bilingual Programs*

As noted earlier, the research of Cazabon, Lambert, and Hall (1993) analyzed in-group versus out-group preferences of children from kindergarten through third grade through the use of sociometric procedures. The results suggested several noteworthy trends. Most children chose to interact with peers across ethnic categories. When ethnic biases did appear, they occurred at Grade 2. At kindergarten, first, and third grades, children selected preferred peers in an ethnic-blind and color-blind fashion; this trend indicates that the children chose individuals rather than members of a particular ethnic or racial group. Biases did occur on issues such as choosing with whom they ate lunch, sat next to, or invited to their birthday parties, suggesting that these types of interactions were different from playing games or working on a task in the classroom environment. These results are consistent with earlier studies that found increasing ethnic cleavage in children's informal contacts, as seen on the playground and at the lunch tables (Criswell, 1939; Traeger & Yarrow, 1952).

Other research results (Christian, 1994; Collier, 1992, 1995a, 1995b; Lambert, 1993; Mahrer & Christian, 1993) suggest that the two-way bilingual program model is the most effective and successful form of bilingual education in terms of overall academic achievement scores. One of the major goals of the two-way bilingual program is to promote positive cross-cultural attitudes (Lindholm, 1994); however, there is a paucity of research on peer interactions of children participating in a two-way bilingual program. Instead, as mentioned earlier, evaluation studies of the two-way bilingual program model have emphasized the academic development of the students.

In contrast to the studies of two-way bilingual programs, the present investigation focused on peer interaction and used systematic observation to obtain the data. The interactive behavior of White and Latino kindergarten children enrolled in a two-way bilingual immersion program was observed in the classroom and on the playground.

### *Research Questions*

The study addressed three basic questions:

1. To what extent do kindergarten children enrolled in a two-way immersion bilingual program interact with same- and cross-ethnic peers?
2. To what extent do kindergarten children enrolled in a two-way immersion bilingual program interact with same- and cross-gender peers?
3. What structural and organizational elements, including activities, of classroom life encourage cross-cultural peer interactions?

## METHOD

### *Subjects*

Twenty-nine children in one two-way immersion kindergarten classroom located in southern Orange County participated in the study (see Table 1). Nineteen of the children were of Latino descent and spoke Spanish as their primary language. The remaining 10 children were Anglo and spoke English as their primary language. The Latino students qualified for the free or reduced fee lunch program. The Anglo students were middle to upper middle class.

### *Setting*

This naturalistic study was conducted in one kindergarten classroom consisting of 29 children. The teacher maintained a consistent predictable daily schedule. The classroom setting was typical of many kindergarten environments in that the teacher had structured the day to include a balance of activities including small group instruction, learning centers, and free choosing time. The morning activity time was structured so that the children completed teacher-designed academic tasks at various learning centers in the classroom. Parent volunteers and the afternoon kindergarten teacher assisted the children with the learning tasks while the kindergarten teacher was engaged in direct instruction with a small group of children. As children completed their required academic learning tasks, they were allowed to have choosing time. A variety of classroom activities were available from which the children could select, including the following: block play, dramatic play in the housekeeping center, quiet reading in the library corner, and listening to recorded stories at the listening center.

*Table 1*
*Subjects of the Study*

| | Boys | Girls | N |
|---|---|---|---|
| **Latino Spanish-Speaking Children** | 9 | 10 | 19 |
| **Anglo English-Speaking Children** | 7 | 3 | 10 |
| TOTAL | 16 | 13 | 29 |

### *Procedures*

Observations were conducted during a four-week period twice a week from January 27, 1997 through February 21, 1997. Observations were collected during centers and free choosing time as well as during outside recess. The classroom observations for this study were recorded during the daily activities time from 9:05-9:45 a.m. Observations were also recorded during the morning outside play period from 10:15-10:45 a.m.

A randomized list of the children was prepared prior to the fieldwork observations. Observations lasting twenty seconds were conducted beginning with the first child on the list and continuing on to the next child on the list. The observations were recorded on a prepared observation form adapted from Howes & Wu (1990). (See Figures 1 and 2). This procedure was repeated as often as time allowed for an average of 130 observations per week.

Five activities were coded: alone, with the teacher, positive interactions including talking and playing, attempting to enter a group, and conflict (either verbal or physical). The activities with peers were classified as same- or cross-ethnic and same or cross-gender. The nature of activity was also recorded for classroom and recess observations. Classroom activities included: academic tasks, manipulative materials, problem solving, asking for help, receiving help and social games. Recess activities included: talking or quiet visiting, walking, running and chasing, group games, dyad play, sand play, and bike riding.

### *Hypothesis*

It was expected that cross-cultural friendships would be observed in the two-way kindergarten classroom for two reasons. First, one of the major goals of the program is to promote positive cross-cultural attitudes (Lindholm, 1994). Second, in the study of kindergarten through third graders which measured children's peer preferences (Cazabon, Lambert, & Hall, 1993), children enrolled in the two-way immersion program did not show ethnic bias when asked "Who in your class is your closest friend?"

## RESULTS AND DISCUSSION

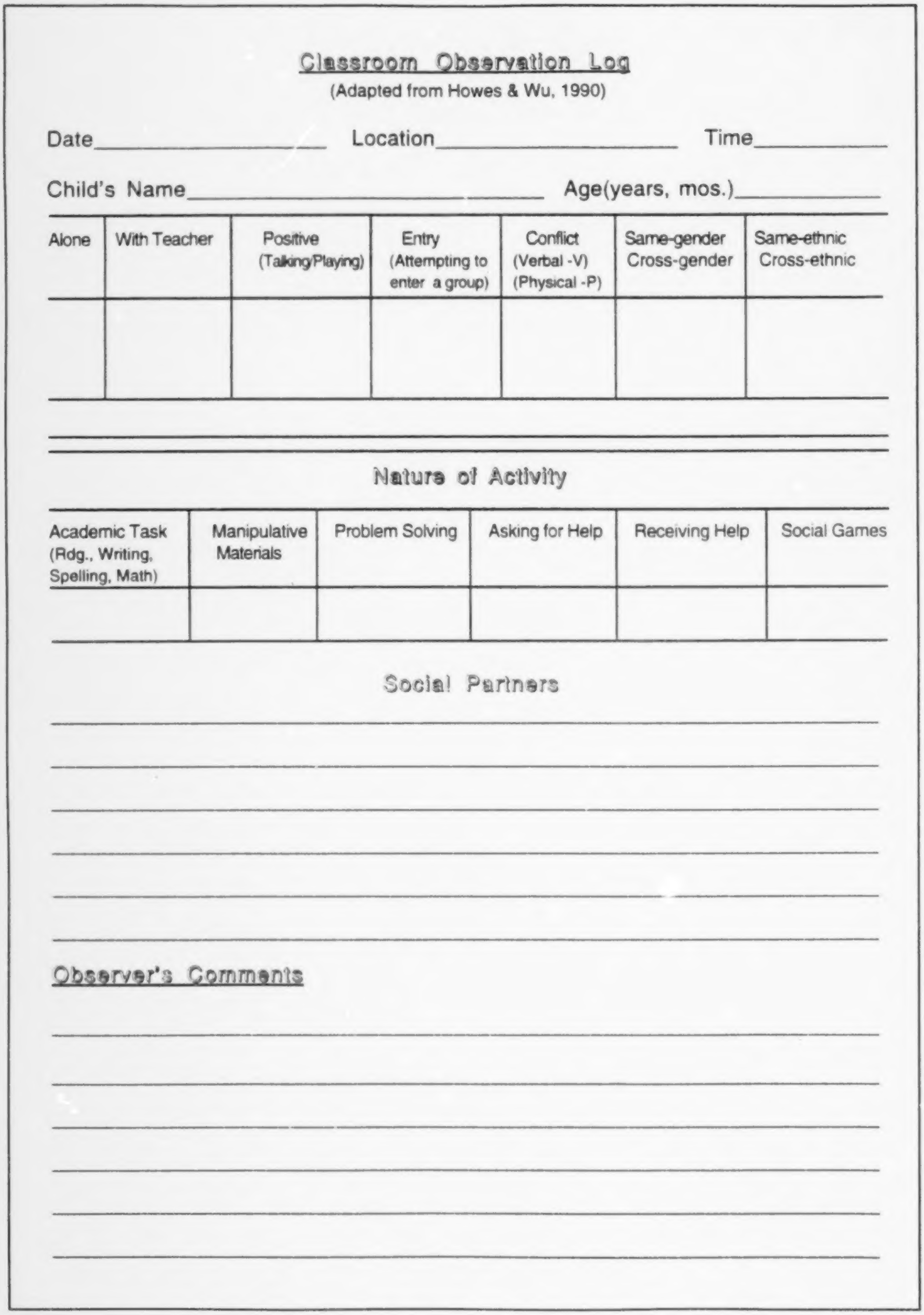
The results of the study will be presented in two major sections: (1) peer interaction in the classroom and (2) peer interaction on the playground.

### *Peer Interaction in the Classroom*

A total of 220 observations of peer interactions were collected in the classroom. Only 7% were cross-cultural in contrast to 21% of the interactions between same-ethnic peers (see Table 2).

*Table 2*
*Peer Interaction in the Classroom*

| Alone | Same-gender | Same-ethnic | Cross-gender | Cross-ethnic |
|---|---|---|---|---|
| 43% | 23% | 21% | 6% | 7% |



**Classroom Observation Log**

(Adapted from Howes & Wu, 1990)

Date__________________ Location____________________ Time___________

Child's Name_____________________________ Age(years, mos.)____________

| Alone | With Teacher | Positive (Talking/Playing) | Entry (Attempting to enter a group) | Conflict (Verbal -V) (Physical -P) | Same-gender<br>Cross-gender | Same-ethnic<br>Cross-ethnic |
|---|---|---|---|---|---|---|
| | | | | | | |

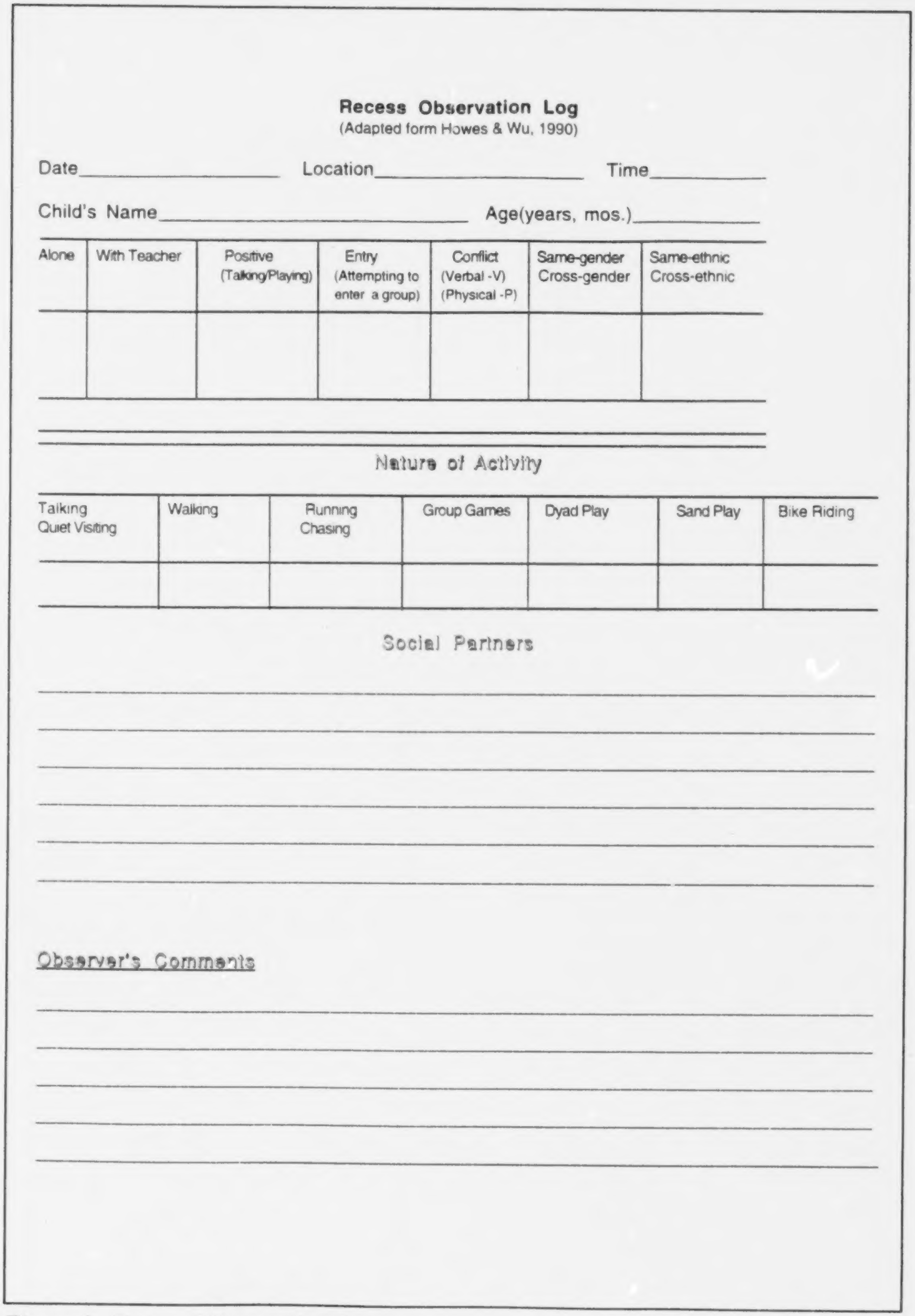
**Nature of Activity**

| Academic Task (Rdg., Writing, Spelling, Math) | Manipulative Materials | Problem Solving | Asking for Help | Receiving Help | Social Games |
|---|---|---|---|---|---|
| | | | | | |

**Social Partners**

**Observer's Comments**

*Figure 1. Classroom Observation Log*



**Recess Observation Log**
(Adapted form Howes & Wu, 1990)

Date____________ Location____________ Time________

Child's Name____________________ Age(years, mos.)________

| Alone | With Teacher | Positive (Talking/Playing) | Entry (Attempting to enter a group) | Conflict (Verbal -V) (Physical -P) | Same-gender<br>Cross-gender | Same-ethnic<br>Cross-ethnic |
|---|---|---|---|---|---|---|
| | | | | | | |

Nature of Activity

| Talking<br>Quiet Visiting | Walking | Running<br>Chasing | Group Games | Dyad Play | Sand Play | Bike Riding |
|---|---|---|---|---|---|---|
| | | | | | | |

Social Partners

Observer's Comments

*Figure 2. Recess Observation Log*

220

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*Table 3*
*Occurrences of Cross-ethnic Peer Interaction in the Classroom*

| | |
|---|---|
| Academic Tasks | |
| Math game | 19% |
| Fruit Loops necklace | 14% |
| Choosing Time | |
| Manipulative Materials-Block play | 53% |
| Transition/Clean-up Time | 14% |

*Table 4*
*Occurrences of Cross-gender Peer Interaction in the Classroom*

| | |
|---|---|
| Academic Tasks | |
| Reading | 7% |
| Math game | 29% |
| Fruit Loops necklace | 7% |
| Receiving Help | 14% |
| Choosing Time | |
| Manipulative Materials-Block play | 43% |

The majority of observations, 43%, were of children completing academic tasks alone at center tables; although the children were seated next to peers, they did not interact with anyone in these observations. The majority of peer interactions were with same-gender and same-ethnic peers, 23% and 21% respectively. A small percentage of the observations collected were of cross-gender (6%) and cross-ethnic (7%) interactions, suggesting that these differences are very strong barriers to peer interaction among kindergarten children.

**Classroom Observations of Cross-ethnic Interaction.** Cross-ethnic peer interaction was observed in 21 instances (7% of the total observations). Overall, most of the cross-cultural interaction occurred during choosing time with manipulative materials, particularly in block play. Observations of children completing center activities that were of high interest, such as a new math game and making a Fruit Loops necklace supported cross-ethnic peer interaction. A third occasion that afforded cross-ethnic interaction was during transition and clean-up times, when cross-cultural peer interaction was observed. (See Table 3.)

**Classroom Observations of Cross-gender Interaction.** Children were observed to interact with cross-gender peers only 6% of the time. Of those instances (see Table 4), 43% of the observations occurred in relationship to academic tasks, 43% in

*Table 5*
*Peer Interactions on the Playground*

| Alone | Same-gender | Same-ethnic | Cross-gender | Cross-ethnic |
|---|---|---|---|---|
| 20% | 33% | 34% | 4% | 3% |

*Table 6*
*Occurrences of Cross-ethnic Peer Interaction on the Playground*

| | |
|---|---|
| Talking and Visiting | 8% |
| Running/Chasing | 25% |
| Group Games (i.e. Duck, Duck, Goose) | 17% |
| Dyad Play | 17% |
| Sand Play | 8% |
| Bike Riding | 25% |

conjunction with block play during choosing time, and 14% were related to receiving help from a peer. Again, the novelty of the academic tasks in which the cross-gender interactions occurred is noteworthy (i.e. playing a high interest math game). Consistent with other research studies (Thorne, 1986, 1993) of school age children, kindergarten boys and girls in this study who interacted in positive ways were engaged in absorbing tasks. Block play afforded opportunities for boys and girls to interact in a relaxed manner.

**Activities Influencing Cross-ethnic and Cross-gender Peer Interaction.** The results of the observations of children's actual behaviors suggest that there are some activities that encourage and/or support children's efforts to interact with cross-ethnic and cross-gender peers. Children seemed more likely to cross cultural and gender barriers when engaged in block play during choosing time. In addition, high interest academic tasks encourage cross-gender and cross-ethnic peer interaction.

### *Peer Interaction on the Playground*

A total of 301 observations were collected of the children's behaviors on the playground. Of these 301 observations, only 3% were among cross-ethnic peers, contrasted with 4% among same-ethnic peers (see Table 5). Clearly, when children ventured outside onto the playground, they were more likely to engage in interaction with same-ethnic and same-gender peers.

**Recess Observations of Cross-ethnic Interactions.** Cross-ethnic peer interactions were only observed 3% of the time. Bike riding and running/chasing activities were more likely to support cross-cultural peer interactions (see Table 6).

*Table 7*
*Occurrences of Cross-gender Peer Interaction on the Playground*

| | |
|---|---|
| Talking and Visiting at Snack Table | 21% |
| Running/Chasing | 16% |
| Group Games (i.e. Duck, Duck, Goose) | 10.5% |
| Sand Play | 16% |
| Bike Riding | 26% |
| Playing on the New Slide | 10.5% |

About a dozen tricycles, including tricycles with attached carts, were available for the children to use outdoors. There was typically a line of interested children waiting their turn to use the tricycles. Although a small number of observations were collected of cross-ethnic peers sharing a tricycle, most of the interactions occurred between same-ethnic peers as they rode on the bikes and in the carts along the pre-determined pathways. Running and chasing on the playground also involved cross-ethnic and cross-gender peers. In addition to the bike riding activities and running and chasing on the grass, group games such as Duck, Duck, Goose were enjoyed in cross-ethnic groups.

**Recess Observations of Cross-gender Interactions.** Only 4% of all observations of outdoor play among the kindergarten children involved cross-gender peer interactions. Of those instances, the majority of cross-gender interactions occurred in relationship to bike riding, although a number of cross-gender interactions occurred in the running and chasing games and at the snack table where children ate and visited quietly (see Table 7). Conversations also occurred as children played in the sand. Of the cross-gender interactions, 10.5% were influenced by the interest in a new slide that was brought outside by the teachers.

**Activities Influencing Cross-ethnic and Cross-gender Peer Interaction on the Playground**. There was relatively little cross-ethnic and cross-gender peer interaction on the playground among the kindergarten children. The activity that seemed to encourage and support those interactions most was bike riding, although other activities such as running and chasing and group games were also observed. Consistent with earlier studies of elementary school age children (Thorne, 1986), running and chase games supported cross-gender interaction on the playground.

### *Structural/Organizational Elements*

Though relatively infrequent, cross-ethnic and cross-gender interactions that occurred were consistent with the findings of other researchers (Thorne, 1986, 1993; Rizzo, 1989) who have pointed out a number of structural/organizational elements in school life that support peer friendships. For example, peer interactions were influenced by seating arrangements and teacher-formed groupings. The teachers in this study consciously formed mixed groups of students. Latino and Anglo boys and girls were often seated around center tables together, and the teacher made a conscious effort to encourage cross-cultural peer interaction among the children.

In addition to seating and grouping arrangements, the daily schedule of activities was found to influence peer interaction. The daily schedule allowed the children opportunities to talk and move around the room as they needed. Consistent with Rizzo's (1989) findings, the more opportunities children had to talk, the more opportunities the children had to make friends. Cross-ethnic and cross-gender interactions were particularly supported by free choice activity time.

Consistent with Thorne's (1986, 1993) studies, cross-gender interactions that were observed in this study were particularly supported by the adult-established routines such as having children form lines to wait a turn. Thorne (1993) noted that "mixed-sex play is more frequent in games like handball or dodgeball in which individuals can join simply by getting into a line or a circle" (p. 40). The kindergarten children in this study who chose to engage in bike riding simply lined up to wait their turn. Similarly, the kindergarten children who engaged in group games such as Duck, Duck, Goose simply joined the circle. Joining *per se* facilitated interaction.

Absorbing tasks also facilitated cross-ethnic and cross-gender interactions. Consistent with research findings of older children (Slavin, 1995), absorbing tasks that emphasized cooperation had a positive effect on cross-cultural peer interaction. Absorbing cooperative activities observed in this study included block play and a math game.

## SUMMARY OF FINDINGS

The findings of this study are consistent with earlier findings of ethnic and gender cleavages among young children. The results of this study are both disappointing and encouraging. On the one hand, not one observation of conflict was noted during the entire four-week period of this study. There were no instances of verbal or physical attack across cultural groups. On the other hand, the hypothesis that the kindergarten children would engage in much cross-ethnic and cross-gender interaction due to the fact that they were enrolled in the two-way immersion program was not supported.

The promise of cross-cultural peer interaction was observed in some situations. When the children finished their work at the tables during center time, they were allowed to choose activities such as reading, block play, dramatic play, and games. During this free choosing time, many more cross-ethnic and cross-gender interactions occurred. Structuring the kindergarten school day to include more opportunities for free play may yield increased cross-ethnic and cross-gender interaction. The emergence of cross-cultural friendships may lie in the years ahead as the children progress through the primary grades (Howes & Wu, 1990).

### INSTRUCTIONAL IMPLICATIONS

It seems clear that children's friendships provide meaningful contexts for learning (Carnegie Corporation, 1996; Corsaro, 1985; Deegan, 1993, 1996; Ramsey, 1991; Rizzo, 1989). The role of the teacher, although not the focus of this study, appears to be significant in organizing the school day to provide for opportunities to interact with diverse classmates. Children in this study who interacted with cross-ethnic and cross-gender peers did so more often when they were engaged in free choice activities in the classroom. The children's purposeful play motivated them to negotiate cultural and linguistic differences in order to build a freeway, construct a bridge, etc.

### CONCLUSIONS

#### *Further Research Needed*

Increasingly educators and researchers are beginning to acknowledge children's friendships as motivational contexts for learning. The movement towards "learning communities" has gained significance in recent years. The present Carnegie Corporation Task Force on Learning in the Primary Grades (Carnegie Corporation, 1996) emphasizes the need for schoofs to support children's friendships. However, very little is known about how to support children's efforts to make friends in culturally diverse classrooms. Research studies that analyze children's friendships in culturally diverse classrooms and the ways in which children negotiate cultural and linguistic differences as they attempt to make friends at school are the logical "next step" in our study of cross-ethnic relations in school settings. The need is great, for as the Task Force on Learning in the Primary Grades (Carnegie Corporation, 1996) points out:

> *All of today's children will experience cultural diversity in tomorrow's workplaces and communities, and they will need curricula that can help them learn about and appreciate different cultures and languages. A constructive way to address the issue of second-language learning is for schools to promote proficiency in two or more languages for all American students. In our rapidly changing world, fluency in other languages and understanding of other cultures are fast becoming requirements for many good jobs.* (p. 85)

Even though this study at the kindergarten level did not show substantial cross-ethnic and cross-gender interaction, other studies at the primary grade level show a gradual increase of peer acceptance. The emergence of cross-cultural friendships may lie in the years ahead as the children progress through the primary grades. Therefore, the Two-way Immersion program model still may be a promising approach. Further research, however, is needed particularly longitudinal studies and in-depth case studies that examine the processes involved in forming friendships and the structural/organizational contexts within which those friendships emerge. As the Task Force on Learning in the Primary Grades (Carnegie Corporation, 1996) notes, "Whether children are engaged and motivated at school depends in large measure on the quality of the relationships they experience there" (p. 98).

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# TEACHING LINEAR MEASUREMENT

CAROL S. GOSSETT

The focus of this article is on teaching linear measurement in kindergarten and first grade. The content is based on the four components of Standard 10 of the Curriculum Standards for teaching mathematics in kindergarten through twelfth grade. Also included is a section on assessment.

The National Council of Teachers of Mathematics (NCTM, 1989) has established curriculum standards for teaching mathematics in kindergarten through twelfth grade. Standard 10 states that the topic of measurement should be included in the curriculum for kindergarten through fourth grade so that children can:

- understand the attributes of length, capacity, weight, area, volume, time, temperature, and angle;
- develop the process of measuring and concepts related to units of measurement;
- make and use estimates of measurement;
- make and use measurements in problem and everyday situations. (p. 51)

Appropriate objectives for the primary curriculum according to research are for the young learner to understand the attribute being measured, to understand the repeated application of a unit, and to understand the way measuring instruments work (Van De Walle, 1990). These objectives should be accomplished by the students through making comparisons in real-world applications.

Further elaboration regarding these objectives is included with the presentation that follows below. This presentation includes elaboration of the four components of Standard 10 and provides teachers with developmentally appropriate activities for the instruction and assessment of linear measurement.

## UNDERSTANDING LENGTH AS AN ATTRIBUTE AND AS A DISTANCE BETWEEN TWO POINTS

### *The Two Types of Length*

Lowery et al. (1986) point out that "the measurement of length is different from other forms of measurement in that it has to do with measuring along a single dimension at a time, whether that dimension is horizontal (width or length), or vertical (height), angular, or curved" (p. 39). There are two kinds of linear measurement: (1) as an attribute or property of an object, such as the length or width of a tabletop, and (2)

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"as a linear distance between two objects or points" (p. 39). According to these authors, the latter is more abstract. Although this distinction of two types of length has not been made in the NCTM Standards for kindergarten through fourth grade, both types will be considered here.

Young learners need to be offered open ended sorting experiences that will help them begin to define length as a characteristic of an object. Offer the students a collection of straws of varying lengths. Ask them to think of a rule and to arrange their straws according to this rule. An example might be from shortest to longest. Samples of questions to use while the students are working at the task of sorting are: Which straw is shorter than this one? (Point to one of the straws.) Which one is longer? Which is the longest straw? ...the shortest? How many are shorter than this one? (Point to the longest straw.) Once the students have sorted a set of straws, give them a set of three more straws to place within the sorted set. They will again need to decide on the proper position at which to place these in the arrangement. Give the students multiple experiences with this type of sorting using a variety of materials such as different lengths of rods, dowels, paper strips, etc.

The comparison involved in the sorting experiences will initiate the appropriate vocabulary to be used: *as long as, longer than,* and *shorter than.* While comparing objects according to length, questions arise such as: How much longer? How much shorter? Comparing the size of objects will lead to the need to quantify. The students will now find the need to count while they measure, thus needing to use a repeated unit for measuring rather than a simple comparison. Learning how to measure to the nearest unit naturally comes next.

Measuring the distance between two objects by placing a straw or a piece of string end to end between the objects will help young children learn about distance between points. Examples include: Measuring the distance from the door to the teacher's desk, the distance a ball travels when rolled along a line, etc. (Lowery et al., 1986). Children can measure the distance they hop on one foot from a beginning point to an end point, or how far they move a toy car or train. They can measure distances between objects to be placed in a mural so as to achieve the structural organization desired. Help children look at distances in their surroundings, such as a long hallway, and in relation to their activities, such as the linear distance they can run on the playground.

In summary, a number of important skills and concepts are developed as young children construct their understanding of length. Through real-world experiences, as discussed previously, the following take on greater meaning:

- An understanding that size is relative to what is being compared
- Use of appropriate vocabulary: *as long as, longer than, shorter than, about*

## THE PROCESS OF MEASUREMENT AND RELATED CONCEPTS

Young learners need to develop the process of measurement through first-hand experiences and lots of practice throughout the year.

Classroom experiences that are child centered where the children can see the usefulness of measurement become rich and engaging lessons. Measuring real objects, making objects of given sizes, and estimating measurements need to be a focus. As noted in the NCTM (1989) publication: "Textbook experiences cannot substitute for activities that use measurement to answer questions about real problems" (p. 53).

To begin constructing an understanding of linear measurement, students need the process skills of comparing and ordering. These skills are important to establish with young children as they begin to understand that measurement is all about making comparisons.

### *Measurement and the Process of Comparing*

Measurement is a process of comparing. Young children's comparisons begin long before they come to school, especially in relation to size. They know that they are small compared to an adult, but large compared to a ladybug. Measurement is the process of making comparisons between what is being measured and a standard. The standard can be a *non-customary* unit, such as another object, (Unifix cube, Teddy Bear counter, etc.) or a customary unit, such as a ruler.

A key to success in measurement is multiple experiences with first-hand practice of comparing. Invite the students to bring in a stuffed toy. Guide them through the experience of comparing the different sizes of the toys, encouraging multiple ways of ordering and grouping them. For example: from smallest to largest, largest to smallest, in groups of the small toys, the medium sized toys, and the large toys. Encourage the students to increase their measurement vocabulary bank through multiple discussions comparing a variety of real-world objects and modeling the use of measurement words, such as *taller than, larger than, smaller than, as big as, compared to,* and *about as long as.*

Throughout the teaching sequence of measurement, the process of comparing is the focus. Is the ribbon as tall as you, shorter than you, the same height as you, or about as tall as you? Important accompanying skills for measurement of length are the abilities to make comparisons and to order and sequence objects and events.

## MAKING AND USING ESTIMATES OF MEASUREMENT

While the young learner is gathering multiple experiences with measuring, strategies of estimation applied to measurement should be introduced. The students will begin to draw from their measurement vocabulary bank using words such as *about as long as..., a little shorter than....* They should be encouraged to develop their own strategies as well as be shown a variety of possible techniques to be used. The young learner will begin by making guesses and then through experience and guidance develop his or her own strategies of estimation.

The teacher can help the young learner to develop and use benchmarks or referents for units of measurement. This will also help students develop a familiarity with the units. Begin by giving the students a good referent for single units and then multiples of standard units. Referents or benchmarks for 1, 5, 10, and perhaps 100 units might be useful. These benchmarks can then be compared mentally to objects being estimated. For example, this rock is about as long as one Unifix cube. That rock is about as long as two cubes.

Introduce a "chunking" procedure when appropriate. Give the students a dowel that is 10 Unifix cubes long. Ask the students to measure the dowel in cubes to establish the benchmark of 10 units and then have them estimate the length of the table top in dowel lengths. It is easier to estimate the shorter chunks along the length of the table top than to estimate the whole length as one. Kindergartners might report that the table top is three dowel lengths long. First and second graders may convert the estimated measurement to single units. For example, the table top is about three dowels long. Each dowel is 10 units long so the table top is about 30 units long.

According to Van De Walle (1990), these estimation strategies should be taught directly and discussed with the students. In addition, the best approach to improving their estimation skills is to have them do a lot of estimating. Keep the following in mind when conducting estimation activities:

1. Guide students in estimation experiences by asking them to follow a specific approach. Once they understand the process of estimation, activities should permit students to choose their own techniques.
2. Discuss the different techniques used by the students. This will help students understand that there is no single "right" way to estimate and also remind them of different approaches that are useful.
3. Encourage a range of estimates. Guide the students to think about what would be a reasonable estimate. Within 10% for length is quite good.
4. Direct students to measure to check their estimates.
5. Make measurement estimation an ongoing activity during the year. A daily measurement to estimate can be posted on the bulletin board. Students can turn in their estimates on paper and discuss them quickly in a 5-minute period. Older students can even be given the task of making up the things to estimate, with a team assigned this task each week.

Estimation activities can be spontaneous and do not need to be cumbersome or elaborate. Build an "estimate first" component into the measurement experiences. One example of an activity which can be visited daily is to divide the class into teams with a list of measurements and have them find things that are close to or within a range of measurements. An example list might include: find something with a length of 10 Unifix cubes, or between five and ten Unifix cubes long, or a height of two Unifix cubes, or a width of 20 Unifix cubes, etc.

### MAKING AND USING MEASUREMENTS IN PROBLEMS AND EVERYDAY SITUATIONS

Measurement is used daily. Young learners should be given the opportunity to apply their measurement skills in real-world applications which are child centered and related to their daily activity and needs. These experiences should be offered to the children while they are building their measurement skills. These activities make the curriculum relevant and create a "need to know" motivation for learning. Example activities include:

- Measuring the height of each student in the study of health, growth and change.
- Measuring growth of plants in the study of life science, botany.
- Measuring the length of string needed for making a macaroni necklace in the study of patterning, counting and problem solving.
- Measuring the length of paper for a class mural or graph.
- Measuring the distance a ball travels when thrown or kicked in P.E.
- Measuring the size of a box needed to use as a container to hold specific items.

These experiences can be offered to the students using non-standard, standard and customary units of measurement. While they are exploring their needs and skills in measurement, guided instruction should be close at hand. Measurement instruction should be focused and well planned by the teacher.

### MEASUREMENT INSTRUCTION

I recommend that teachers include the following three steps in teaching measurement: the use of non-standard units, then the use of standard, non-customary units, and, lastly, the use of standard, customary units. Throughout each step, specific measurement skills are developed.

The NCTM (1990) advise that even in the early use of non-standard units, the following skills are to be addressed:

- Placing a unit consistently and correctly and giving reasons for doing so
- Simulating the use of many units by employing one unit repeatedly
- Measuring to the nearest unit by rounding up or rounding down (p. 233)

Another important skill is the use of appropriate measurement vocabulary. The three instructional steps are discussed below, followed by an elaboration of the four skills. Learning activities are also provided.

### *Three Steps of Measurement Instruction*

The teaching sequence begins in each step with the question, How long? When asked to compare the length of two objects, after the initial comparison through sorting, the use of *non-standard units* provides a child-centered method of measurement to answer the question of How long? Using children's own body parts as a unit of measurement is a natural focus for linear measure. Examples of body units are their hands, feet, or fingers used as measuring units. These are considered *non-standard units* because they are not uniform in size for all students. Other non-standard units include different sizes of shells, rocks, etc.

A common starting point needs to be defined for the purpose of comparing two items. A line on a piece of paper or a strip of tape on a table helps the child evenly line up the items he or she is comparing. Another way is to place the objects on end (vertically rising from the table top). Vocabulary of *same as, shortest, longest* is introduced.

Once the process of comparing and measuring has been established through multiple experiences, students need to make the transition from *non-standard units* of measurement to *standard-non-customary units.* Standard, non-customary units are units which are uniform in size, but are not used as a customary unit of measure in the real world. Examples are: Unifix cubes, paper clips, Teddy Bear Counters, etc. There must be a need established for making the transition. A situation might be, two children compare their answers for measuring the same object and get very different measurements when using the same type of body unit. This type of experience helps them see the need for units that are consistent and that give the same answers. For example, one child has a size five foot, while the other has a size ten. Both are using the same type of body unit, their foot, but both are not the same size unit of measurement and thus will give different answers to the measurement of the same object or distance.

A need is established for a more consistent unit of measurement, and the sequence continues when the concept of standard-non-customary units is introduced to solve the problem of conflicting answers. The skills of the process of measurement introduced using non-standard units need to be revisited, now using standard-non-customary units, such as Unifix cubes and Teddy Bear Counters.

Next is the transition to customary units, the U. S. standard system, hereafter referred to as customary units. Once the students have measured an object in a standard unit such as Unifix cubes, ask them if they think they could tell someone who has never seen a Unifix cube the length of the object measured. Would that person have any understanding of how long the object was without knowing how long a Unifix cube is? Discuss with the children what they have seen their parents or adults use to measure objects, (ruler, tape measure, yard stick). Discuss how people all over the world usually have access to these types of measurement tools. This discussion begins the transition into the use of customary units.

The daily measurement activities can now use standard units of measurement. For example, direct teams of students to find items that are about one foot long, about two feet wide, around three feet high. When measuring paper for a class graph, tell the students to measure enough paper to make a six foot long graph.

The students have passed through three stages of linear measurement. They began using nonstandard units (body units, rocks, shells) made the transition to standard units (Unifix cubes) and finally entered into the use of customary units (rulers). As noted earlier, throughout the three steps of teaching measurement, four skills need to be addressed. Discussion of these skills follows next.

### *Elaboration of Measurement Skills*

**Careful and concise measuring techniques** must be established to show the importance of placing the unit consistently along the object to be measured. If, for example, students use a hand unit to find how long a string is, one student may spread out his or her fingers and another student may place one hand up and the next one down in different directions. Guidelines need to be established for careful and consistent measuring techniques among the students. Students may set the following guidelines, everyone must place their fingers together and upright when measuring with their hands. Another time they may decide that everyone must spread their fingers wide apart and measure finger tip to finger tip across the object. When using standard units, the young learners may decide that everyone must place the Unifix cubes upright, one next to the other. Another time they may decide all cubes need to be locked together in a train when used to measure. Discuss with the children the starting and ending points for measuring. Point out the need for everyone to begin and end at the same points on the object they are measuring in order to achieve an accurate comparison.

**Being able to use one unit repeatedly** is the ability to repeat the measurement action with one *unit*, that is, one hand, or one Unifix cube or one inch. Careful placement of the *unit* and careful marking are important to describe the approximate length of an object. How many Unifix cubes can we place along a pencil to show its length? What if we only have one cube to make our measurement?

**Understanding the concept of rounding to the nearest unit** is another important skill which should be introduced from the beginning stages of measurement. Is the measurement more or less than half your hand print? (It's about half my hand print. It's about as long as two of my hands.) Using the term "about" is a key element of *measurement vocabulary.* Students need to be led to the generalization that when half or more than half of the unit is used, the measurement is rounded up to the next whole number. Direct the student to lay the cube next to the pencil, mark the distance it measures, move it, mark again. Note the need for accurate placement and careful marking.

### *Using Appropriate Measurement Vocabulary*

In all measuring activites, emphasize the use of approximate language. The paper is a little less than six thumbs wide. The box is about 10 Unifix cubes long. Theoretically, no measurement is absolutely accurate (Van De Walle, 1990). The use of approximate language is very useful with younger children using large units because many measurements do not come out "even."

Through multiple experiences students will begin to build an intuitive knowledge of which unit to use in each measuring situation. They will discover why a measurement tool is designed certain ways, and why there are different measurement tools for different measurement projects. Suggestions for teaching are described below.

### *Using Measurement Skills*

Choosing the most appropriate unit is also an important measurement skill. Challenge students to decide on the best unit for measuring various objects. To measure the width of our classroom, would you prefer to use a thumb unit or a leg unit? (Probably a leg.) When would you use a thumb? (For smaller things, like the width of a book.) Ask similar questions in the *standard -non-customary stage.* Would you prefer measuring the width of our classroom using cereal boxes or paper clips? (Probably cereal boxes.) When would you use paper clips? (For smaller things, like the width of a book.) Ask the same questions about the customary unit.

Learning to use measurement skills can be enhanced when children construct the measuring instruments. As noted in the following section, children can construct several kinds of measurement tools.

### *Constructing Measurement Tools*

The construction of measuring tools needs to be embedded in the teaching sequence. A strip of paper can be used to make a ruler by using *non-standard* units such as children's hands, feet, fingers, etc. to mark off each unit division on the measuring tool. The process of developing their own measuring tools will help the students construct their understanding of the tool and the relationship between the physical act of measuring and the verbalizing of the quantification of the measurement. They should also begin to realize the inconsistency of these measurements when two students, who each have made a tool that they may call a one hand unit, get different answers when they measure the same object. When moving to the *standard -non-customary stage,* direct the students to mark their rulers off using a consistent unit of measurement, such as Unifix cubes or paper clips. Finally, during the customary unit stage, direct the children to make their own rulers using pieces of paper measured in inches. The transitions between stages should be natural and easily made by the children who have experienced this sequence in the teaching of linear measurement.

Included in the teaching of measurement is assessing children's learning. A description of one type of assessment is presented below.

## ASSESSING THE STUDENT'S UNDERSTANDING OF MEASUREMENT

Match Me ...Show Me... Tell Me is my own assessment program that I used throughout my years of teaching young children. This program can help teachers follow the young learner's development of understanding of many skills taught in early childhood education. The following is an example of using this form in assessing measurement:

1. Match Me ...Give the student a set of objects containing pairs of objects of like lengths. Direct them to match the pairs within this set that are the same length. Or show the student an object and direct the student to find another object matching in length.
2. Show Me... Give the students a set of objects of different lengths. Direct them to show the longest object...the shortest object, or show the student an object and ask the student to find another object that is shorter or longer than your object.
3. Tell Me... Show the students a set of objects of different lengths. Hold up two objects. Direct them to tell the class about the objects in relation to measurement. For example, the child may say, "The pencil is the longest. The chalk is the shortest." "The clay worm is about as long as the pencil."

This type of assessment can be done on an individual basis or in a small group. A casual conversation with the students while they are sorting or measuring various objects will reveal their level of understanding of measurement. Observing the students with a purpose will give the teacher insight into what next steps in measurement will be needed for a rich, child-centered curriculum.

## CONCLUSION

The kindergarten-first grade curriculum in measurement should be offered to the students as concrete, real-world experiences using non-standard units, moving to the use of standard units and finally to the use of customary units. While exploring these units, the young learners will build their understanding of measuring to the nearest unit, the repeated use of a unit, and how to recognize and state a reasonable estimate of a linear measurement. To learn to ride a bicycle, one does not learn all about the bicycle's structure, gears, center of balance, etc. before the first try at peddling. As in bicycle riding, allow the young learners to explore, use, and discover measurement through "doing." The purpose of teaching measurement is to prepare the young learners to communicate using measurement concepts in everyday real-world situations.

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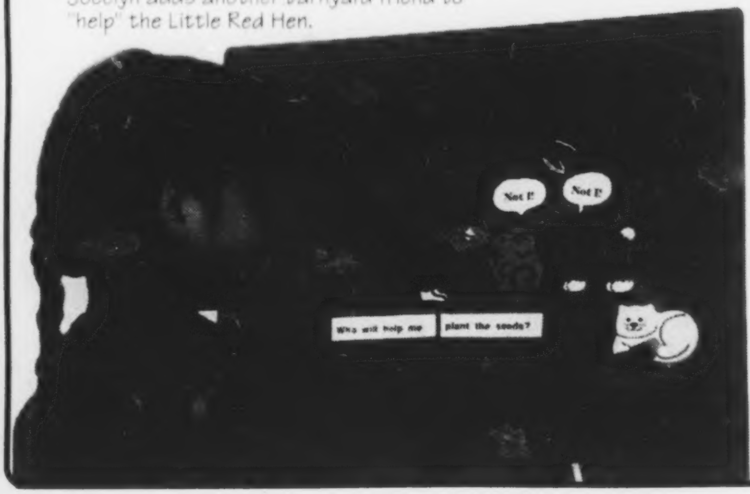
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# Kindergarten Education: Theory, Research, and Practice

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# Imagery And Drawing; Piaget's Symbolic Function And The Foundation Of Reading (Part 4)

JEANETTE MCCARTHY GALLAGHER

This is the fourth article in a series on Piaget's symbolic function (oral, written and printed language, imagery, drawing, and pretend play) as the foundation of reading. Emphasis is placed upon the child's construction of mental images that become means of internally representing the world. These images in turn provide background for drawings and the understanding of stories. Children in kindergarten start to represent "stories" by their pictures in which they incorporate persons, actions and surrounding objects. If children are still scribbling (drawing in a non-representational manner), suggestions are given to move these children to the representational level. By telling and retelling a story, dramatizing and listing characters from it, children build a rich base of images which may be used to draw and to label various scenes from the story.

> *I cannot work with children without having crayons and paints beside me.*
>
> *I've collected thousands of drawings and paintings from children, not only in the research I do but as a teacher and as a therapist with children. With these works, children give expression to their troubles, their aspirations, their hopes. The pictures are clues to what's going on in their lives and in their minds, in their hearts.* (Coles, 1993, p. 96)

Robert Coles, the noted psychiatrist, uses drawings to communicate with children. He realizes that children express themselves through this aspect of the symbolic function. It is not possible, however, to investigate how drawing fits into the kindergarten curriculum without a focus on imagery, another aspect of the symbolic function and a rich source and support for children's learning. Piaget and Inhelder (1969) consider drawing to be "halfway between symbolic play and the mental image" (p. 63). Both drawing and play give pleasure, while drawing and imagery imitate reality. Symbolic play will be the topic of article five of this series on the symbolic function and the foundation of reading. The present article centers upon imagery as enriching drawing and both in turn enriching early attempts at reading and writing.

---

JEANETTE MCCARTHY GALLAGHER (Senior Professor, Temple University; Adjunct Professor of Educational Psychology, Lehigh University) provides workshops and lectures on Piaget's theory as it applies to education. Correspondences should be sent to her at 30 Golfview Road, Doylestown, PA 18901

## IMAGERY AND THE ASSIMILATIVE BASE

> *The ability to represent things of the world via mental imagery. . .is perhaps the central achievement of human intellectual development. This ability allows us to use symbols such as words or pictures to stand for elements not immediately available to our senses. And only with this kind of representation can we conceive of persons, objects, and events beyond our present reach.* (Gardner, 1978, p. 71)

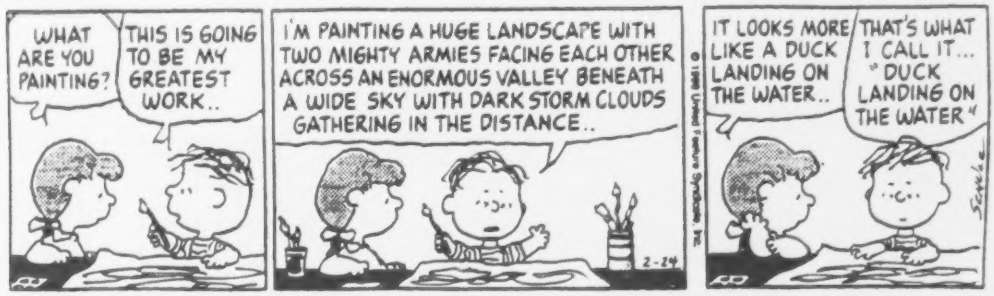
Let us start on the light side before we deal with the importance of the mental image in the writings of Piaget and Inhelder. Some recent cartoons of the Peanuts family of Charles Schultz are set within a kindergarten classroom. In the cartoon from the Philadelphia Inquirer (February 24, 1998) the character Rerun has completed a "masterpiece." Rerun's friend (still not given a name by Schultz) brings him back to a manageable set of images with "Duck landing on water."

Recall the diagram of an Assimilative Base (Gallagher, 1997; p. 7) in Part 2 of this series of articles. An assimilative base was defined as an active network of relationships providing a knowledge foundation for acquiring further knowledge. Children actively build upon what they already know. Rerun's assimilative base was somewhat weak when he tried to represent "mighty armies." A switch in titles, therefore, was easy!

Key elements in an assimilative base are the many images related to present, past, and even future or anticipated experiences. These images, which interplay with children's talking, listening, dancing, playing, and drawing (and later reading and writing) are ways of representing the world. Paley (1988), a master teacher, relates how a focus on happy images pulled four-year-old Margaret out of a dark mood. She volunteered to tell Mrs. Paley a story because she had been "telling one in her head" all by herself in the doll corner.

> One day a bunny was planting a carrot patch for herself. Then a nice little girl the nicest little girl in

**Peanuts**


WHAT ARE YOU PAINTING?
THIS IS GOING TO BE MY GREATEST WORK..
I'M PAINTING A HUGE LANDSCAPE WITH TWO MIGHTY ARMIES FACING EACH OTHER ACROSS AN ENORMOUS VALLEY BENEATH A WIDE SKY WITH DARK STORM CLOUDS GATHERING IN THE DISTANCE..
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2-24
IT LOOKS MORE LIKE A DUCK LANDING ON THE WATER..
THAT'S WHAT I CALL IT... "DUCK LANDING ON THE WATER"
Schulz

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> the whole world comes and the nicest little girl says, "If only you give me those seeds, I will help you plant the carrot patch." Then the bunny said, "If I only give the seeds to the little girl, she will plant them for me." So she gave the seeds to the nicest little girl. Then one day they had a big carrot garden and the bunny was happy. (pp. 70-71)

Margaret seems to be combining images of Peter Rabbit and what she perceives as fitting behavior for a nice girl. "Margaret's story transforms her instantly into the nicest little girl in the whole world, someone who knows how to make a bunny happy" (Paley, 1988; p. 70).

The key to understanding the meaning of images in Piaget's theory (Inhelder, 1976; Piaget, 1952, 1962, 1992; Piaget & Inhelder, 1969, 1971 ) is not to confuse images with percepts, that is, images are not formed directly from perceptions. As Piaget and Inhelder (1969) state:

> If the image were merely a prolongation of perception, it would appear from birth. Yet no evidence of it is observed during the sensorimotor period. It seems to begin only at the time of the appearance of the semiotic [symbolic] function .... mental images are relatively late in appearing because they are the result of an internalized imitation. (pp. 68-69)

The term "internalized imitation" becomes clear in an often cited incident which Piaget recorded of his daughter, Jacqueline, at sixteen months. Jacqueline had observed a boy of her age who engaged in a temper tantrum while in his playpen. Piaget (1962) continues:

> The next day, she herself screamed in her playpen and tried to move it, stamping her foot lightly several times in succession. The imitation of the whole scene was most striking. Had it been immediate, it would naturally not have involved representation, but coming as it did after an interval of more than twelve hours, it must have involved some representative or pre-representative element. (p. 63)

Jacqueline had internalized the incident and later represented it. In other words, she had made her own construction of the images of a temper tantrum -- stomping of the feet and movement of the playpen. Flavell (1977) clarifies Jacqueline's actions in relation to the meaning of mental imagery as an aspect of the symbolic function:

> The symbol (imitation of tantrum) physically resembled the referent (original tantrum). The symbol was produced at considerable temporal remove from the referent, and therein lies the clearly symbolic character of deferred versus immediate

> imitation [such as to "mimic"]. The child presumably evoked or produced some sort of internal representation (possibly a visual image) of the tantrum as a guide or model for her imitative action; it was not a simple, more clearly sensory-motor case of precisely accommodating to an external, physically present, immediately perceptible model. (pp. 34-35)

In sum, the images formed a set of relationships or correspondences (Piaget, 1992) which aided in the delayed reenactment of the temper tantrum.

An image as a construction, therefore, cannot be understood as "something out there" in the environment which is reproduced as an exact copy of "something in there," that is, as a picture in the brain.

We return to a common Piagetian mantra: children grow in knowledge, not by copying reality, but by constructing it. Successful teachers encourage children to form relationships by relating new images to sets of already acquired images. Activities based upon perception, such as the showing of pictures by a teacher, will be effective when the children construct their own relationships among the pictures or between the pictures and a story or lesson of the day. Often these constructions are aided through careful questioning by a teacher who asks puzzling questions. We will return to this procedure in the application section below.

Imagery is the aspect of the symbolic function which is often ignored in the development of preschool and kindergarten curricula. Research by cognitive psychologists, using an information processing (computer) model of mental activity, has provided some interesting findings which relate to children's learning (Best, 1992; Kosslyn, 1978; Reynolds & Flagg, 1983). One important finding is that children tend to use visual imagery when confronted with a problem to solve more often than adults do. In fact, children rely on imagery when it is not necessary, that is, imagery becomes a fall-back solution. Finally,cognitive psychologists have extensively bolstered the dual coding hypothesis of Paivio (1971; 1974) which provides for two independent but connected systems in the development of cognition or mental activity. The verbal system is specialized for dealing with language activities. The imagery system is specialized in the storing and retrieving of concrete objects and events. It is not surprising that the imagery system is more often used by children for storage and recall of information. We will return to this finding in the application section.

Note that no attempt has been made in the present article to distinguish between imagery and imagination. Briefly, imagination may be understood as the fanciful use of imagery which is related to symbolic (pretend) play (to be addressed in Article 5 of this series).

## THE DRAWINGS OF KINDERGARTEN CHILDREN: IMAGES AS RESOURCES

> *Left to themselves, children will draw representationally when they are ready. They will want to picture something from their own lives, from stories read to them or from their own fantasy world. They will do this in their own time without adult interpretation.*
> (Kellogg, 1967, p. 77).

Kellogg was one of the first investigators to promote the idea that for children to initiate drawing is as natural as walking and talking. Teachers do not need extensive training in formal art to guide their young pupils' drawing.

Milbrath (1998) conducted a study comparing "talented" and "non-talented" children. The categories were formed after the teachers of the children studied their drawings relative to levels of representational ability. A striking finding was the wide range of drawing ability exhibited by children as young as four years. One child at this age was already applying some understanding of perspective. Teachers of kindergarten children need not be surprised when drawings range from nonrepresentational to representational.

An interesting phenomenon may be observed in the drawings of five-year-old Danny in Figures 1 and 2. Danny starts by announcing he is drawing a train. Upon completion he said: "Oh, I think it looks more like a boat." Immediately he takes another piece of paper and draws a boat. Note that the box cars have been converted to sails and the jagged tracks have become smooth waves and ripples. What seems to be happening is an interaction between original imagery and the first drawing. Feedback from the first drawing prompted an image of a boat. Danny proceeded to redraw rather than try to convert the first drawing to the second image.

Alex, a kindergarten child who drew Figure 3, was enrolled in a

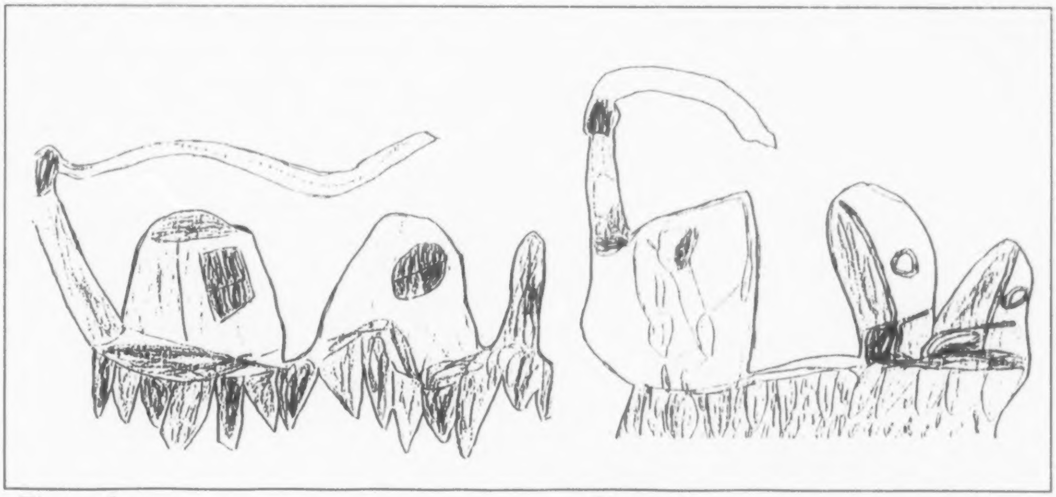


*Figure 1* *Figure 2*

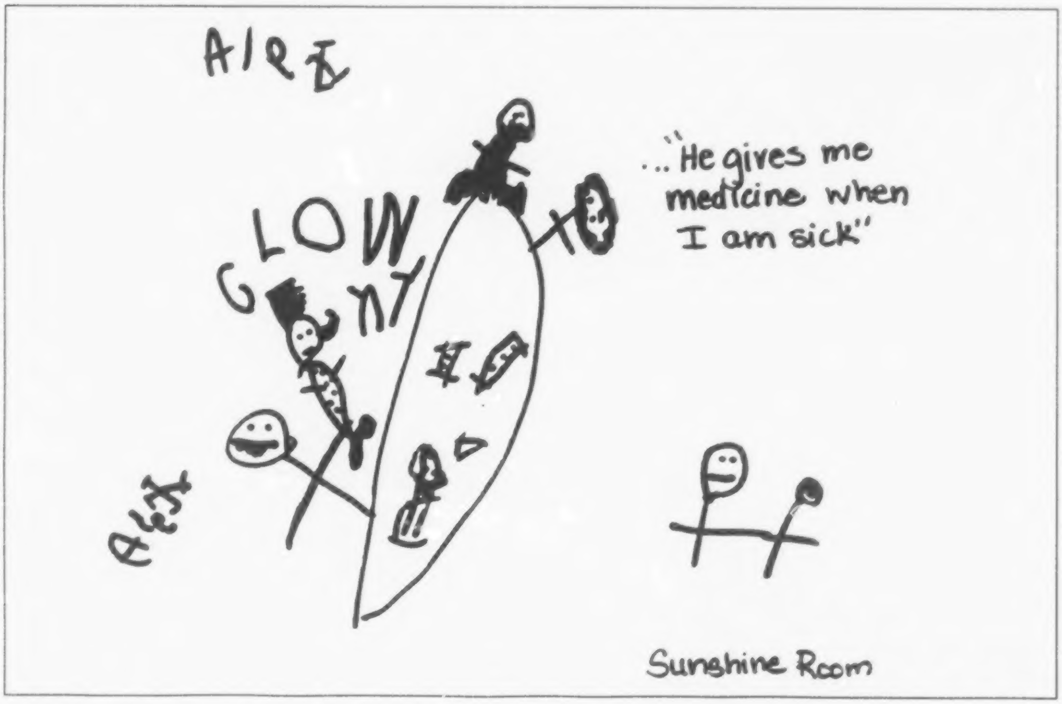
*Figures 1 and 2. Five-year-old Danny decided that his drawing of a train in Figure 1 reminded him of a boat. He proceeded to make a new drawing of a boat (Figure 2).*

daycare center connected to a hospital. The children had made various trips to the hospital, discussed their experiences and then made drawings. The pills on the table, the clown from the children's ward and the measles on the child all invoke images related to hospitals and doctors. The child relates the entire event to a time when he was sick. In sum, drawings flow naturally from children's images which relate to their many experiences.

## THE DEVELOPMENT OF DRAWING

> *Indeed, the ages of 5 to 7 seem to us a very special time, one that deserves to be termed the flowering of symbolization. Children of this age can readily produce stories, songs, drawings, dances, and other symbolic products and do so in an exceptionally expressive, original, inventive, and spontaneous way . . . . It is a time of temporary heights of artistic activity, a brief but treasured moment when children gain genuine pleasure from involvement in the arts and fashion products that . . . display a special air of charm and inventiveness.* (Gardner & Wolf, 1987, p. 314)

The kindergarten teacher is



..."He gives me medicine when I am sick"

*Figure 3. Alex highlighted images of his encounters with his doctor. The teacher printed his comment.*

especially fortunate in that the five-year-old has embarked on a new level of representational ability. At this age, teachers often observe that children's drawings "tell" a story with three or more related objects. For example, a child may place in his or her drawing not only a person but also an activity of that person set within an environment (sun, flowers, etc.). By making use of a network of mental images, the child is able to construct a drawing demonstrating an understanding of meaningful relationships. It is interesting to note that until this age, most children do not incorporate persons into their drawings (Kellogg, 1967; Gardner & Wolf, 1987).

Some kindergarten children, however, continue to scribble, either

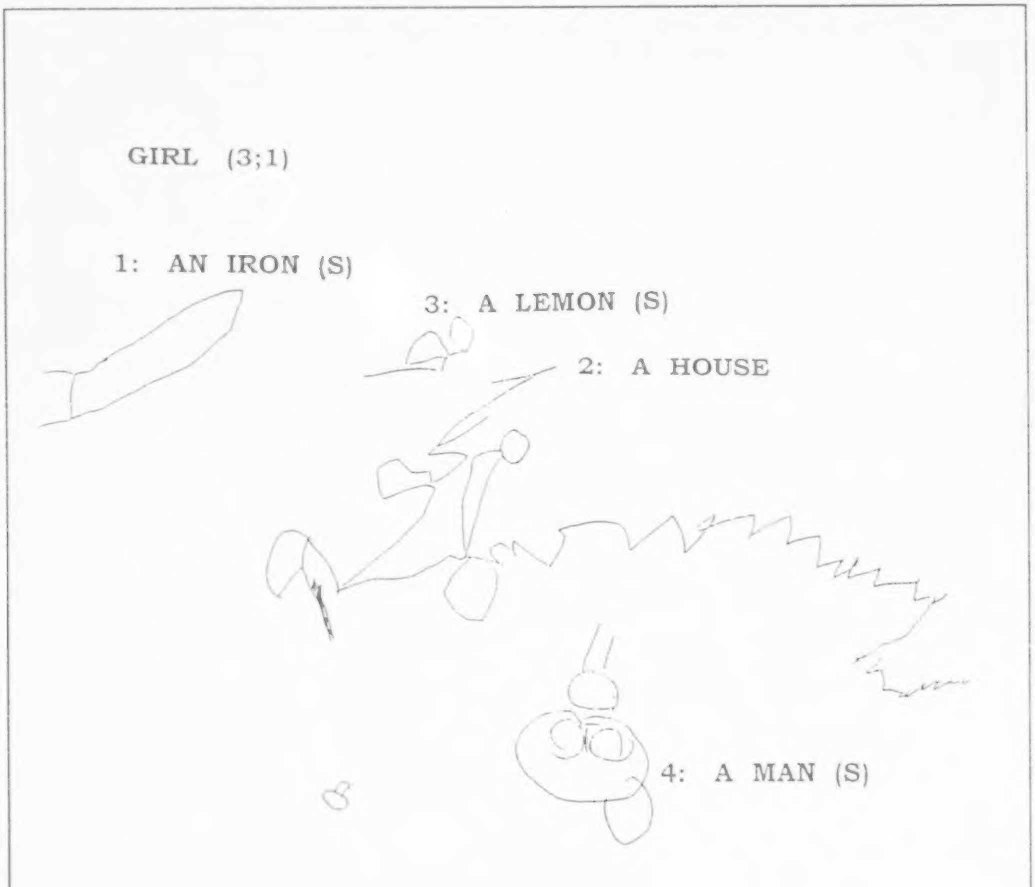


*Figure 4. Adi-Japha, Levin & Solomon (1988). This three-year-old girl demonstrated representational drawings at a stage when many children are still scribbling. When probed she found a house in the scribbling in Drawing 2. Figure reprinted by permission of Ablex Publishing Corporation.*

making each "drawing" a mass of scribbles or adding scribbles to a completed drawing, often to fill in empty spaces or to decorate a drawing. As Kellogg (1967) wisely observes, adults find it difficult to interpret these scribbles:

> The child is seldom concerned with drawing things as they are so much as he is with creating structures that please him. For example, a scribble with many loops serpentining around a house-like shape might look like chimney smoke to an enterprising adult; not so to the child. It's not smoke at all, just a decorative wiggly line that serves to float a figure in the air. (p. 15)

Adi-Japha, Levin and Solomon (in press) have completed perhaps the most extensive study of scribbling. The key purpose of their research was to identify and characterize early instances in which children give meaning to their drawings. Adults are able to identify objects in some preplanned drawings of three- and four-year-old children. These drawings may include extra scribbles that complicate interpretations.

Note the scribbles of a three-year-old girl in Figure 4 ("S" means that the child spontaneously told the researcher what she had drawn). Drawing 4 as "man" is the clearest of the set. Drawing 2, the one the child did not spontaneously label, is most revealing. The researchers discovered that if they asked the child to label the overall drawing, the child often gave no response or said "I don't know." However, if the researchers looked for a breaking point and asked the child to label a part of the drawing, an answer was forthcoming. Note that a breaking point in Drawing 2 appears about an inch from the left side of the drawing. A distorted image of a house may be observed.

Adi-Japha, Levin and Solomon (1998) found that angular curves at breaking points in scribbling were reported by younger children (ages 2 and 3) to represent a real object such as a boat even though it may be difficult for an adult to decipher. Smooth curves were often nonrepresentational and not labeled by the child. This research may provide useful techniques for kindergarten teachers like those who have reported to me in workshop sessions that they are frustrated with children who only want to scribble. To determine what image a child is trying to represent, it is necessary to study the entire drawing. By then focusing on a breaking point in a part of the drawing, the teacher may receive a revealing answer to a question such as "Can you tell me what is happening here?" Such a procedure may give kindergarten children more confidence in their ability to move from nonrepresentational scribbling to representational drawings and subsequent "stories" about the drawing.

## APPLYING RELATIONSHIPS BETWEEN IMAGERY AND DRAWING IN KINDERGARTEN CLASSROOMS

*Once the children had truly experienced ladybugs (!), we introduced our story, The Grouchy Ladybug by Eric Carle. We read the story*

> *seven to nine times. The first few times, we read the story from the book, then we asked the children to take part in re-creating the book. Sometimes they would make a big class book that retells the story. At other times... the children retold the story by making a mural. The mural's characters (displayed on the wall) were fingerpainted by the children to resemble the book's illustrations. The children then sequenced the entire story, working in cooperative groups.* (Kuball, 1995; p. 7)

The children in Kuball's kindergarten class were given the opportunity to build a strong set of images which empowered them to retell the story by drawing a mural. Another approach might have been to encourage labeling so that the writing activity would interact with the drawing. (The reader is encouraged to reread the excellent article by DuCharme [1996] on drawing and writing which appeared in a previous issue of this journal.)

By introducing activities that lead to a strong imagery base, the teacher is providing the groundwork for future success in reading comprehension. According to a vast amount of research in cognitive psychology, the child's knowledge base becomes a key factor in understanding text (Adams, Trieman, & Pressley, 1998; National Research Council, 1998). As Best (1992) has expressed: "Reading is always done in some context" ( p. 348). Imagery becomes a support in remembering past events and anticipating possible future events. The drawings that flow from a strong imagery base add to this support.

Recall that children use imagery to aid in storing and retrieving of information. The images may be in many forms beyond the visual. Images may also develop from moving, touching, and hearing. All of these bodily activities may be used to enrich drawings. Children may close their eyes, squat and slowly rise as a growing flower. The wind in the trees, the movement of water, and the sounds of various rhythms in music may be pantomimed and then drawn in sweeping strokes on large sheets of paper. The old adage of "reaching the whole child" becomes modern again!

It is important to provide a step-by-step guide for new teachers who want to capitalize on the relationships between imagery and drawing. (Experienced teachers may wish to adapt these steps according to their own interests and needs).

Recall that an assimilative base of imagery is related to all areas of the symbolic system: story comprehension, storytelling and retelling, dramatization, early writing-reading interactions, drawing, and play. The focus in the following sequence is centered upon building imagery through stories with drawing as a cumulative activity.

Our point of departure will be a simple, well-constructed story consisting of: (1) a clear beginning; (2) a plot incorporating a problem that is within the realm of understanding for kindergarten children; and (3) an ending which solves the problem. The story "Alfie Gets in First" (Hughes, 1990) fulfills all these requirements:

(1) Beginning: Upon returning from shopping, Alfie wants to get home first so he runs ahead of his mother and sister, Annie Rose.

(2) Problem: Alfie's mother places the groceries and house key in the front hall and proceeds down the outside steps to fetch Annie Rose. Meanwhile, Alfie closes the door, thus locking himself in the house, and starts to cry because he cannot reach the inside door knob. Kind neighbors and workmen try to plan strategies to reach Alfie.

(3) Ending: Alfie uses his small chair to reach the knob and opens the door. Alfie, his family, neighbors and workmen all enjoy tea.

Sequence of activities for enrichment of imagery and drawing:

DAY ONE - Teacher introduces the story by asking children to recall if they or someone they know were ever locked out of a house. Next the teacher introduces a puzzling question: "How could someone be locked in a house? Let's find out what happens to Alfie when (pointing to title) Alfie gets in first." The story is read to the children with ample time given to them to look at the clear illustrations. Next, a few comprehension questions may be asked such as: "Why did Alfie cry?" "Why did his baby sister cry?" "Who tried to help Alfie?" Finally, the teacher informs the children that they will return to the story on the next day.

DAY TWO: Reread the story and show the pictures. Individual children are asked to tell the story from the pictures.

DAY THREE: On a large chart make a list of the characters with their pictures. Have children "read" the list of characters. Children may volunteer to play the various characters.

DAY FOUR: Dramatize the story. Add other neighbors who wish to help Alfie so that all children participate.

DAY FIVE: Children work in small groups to draw a large book which retells the story.

Note that the children are given many opportunities to build a strong image base before drawing takes place. Repetition of the story in various forms such as rereading, retelling from pictures and from verbal recall, dramatizing all reinforce images which will enrich the drawings. Prereading and writing activities reinforce the images through labeling of the pictures and the naming of characters.

In Part 2 of this series on the symbolic function and language, emphasis was placed upon the use of themes to promote a rich linguistic base as a foundation for reading. All of the suggestions in the article equally apply to the building of a strong imagery base for drawing. A five day progression on the topic of bridges may include a host of activities for the development of images: reading to children about bridges, using bodily movements to imitate bridges, visiting bridges in the neighborhood, and making lists of various types and uses of bridges. Finally, the drawing, building and labeling of various bridges would blossom from the accumulated imagery gained during activities of the previous days. Listen, repeat, tell, observe, move -- then draw!

A powerful lesson may be gained from the Reggio Amelia schools in Italy (Hendrick, 1997; Edwards, Gandini & Forman, 1995). After many careful observations during field trips to the same neighborhood location, children talk about their experiences from their foundation of images. Later large detailed drawings of the excursions are made. After the children discuss what they have drawn, the teachers provide assistance in labeling. The drawings in themselves become a language for these children. What is important to note is the slow buildup of a foundation of images which enriches the drawings.

## CONCLUSIONS

Children's drawings flow from an assimilative base of images. When teachers take time to build a rich network of images, children become excited when drawing and labeling. Drawing becomes a "language" for the expression of ideas and feelings and therefore, it should feel as natural to the child as the use of spoken language. It is necessary to repeat a story in many ways to foster the building of images. Such repetition may seem boring to adults but children thrive on it, for this repetition provides a framework of familiarity and mastery. What is to be avoided is a quick move from the reading of a story to making drawings or "craft" projects such as pasting cotton on the outline of a bunny after reading a related story.

Activities in kindergarten need to be selected in such a way that as many aspects of the symbolic function as possible are intertwined in each lesson. These are some possible questions to be used to evaluate an activity: (1) Are the children talking about the story in relation to the drawing?; (2) Are the children spontaneously seeking help from other children or the teacher in order to write a description or a label for their drawing?; (3) Are the children bringing drawings completed at home which show interest in the story?; and (4) In the days to follow, are the children "reading" their posted drawings to themselves or other children?

In the next article in this series, symbolic (pretend) play will be explored as a medium for interactions among all the aspects of the symbolic function. Piaget's great interest in this area of play will be highlighted.

## LETTER TO PARENTS

Dear Parents

This month we have been enjoying walks around the school to see signs of Spring. Some of the children found buds just opening. Others saw lilies peeking through ground, and we talked about the many colors that we soon would be seeing. The children were fascinated with the variety of trees at different stages of spring growth. Some had buds that were just swelling, others had flowers before the leaves, and still others had pale green leaves that were yearning to open wider. We waited three days and what a surprise! I was amazed how much the children remembered from a few days before and how excited they were with the changes of Spring. On our third excursion around the school the next week, the children spotted trees or plants they would like to draw and label. They did not copy branches that we brought in but instead recalled the images of what they had seen. We are sending those drawings home soon so you will be able to share the joy of Spring with your children.

I am trying to help the children to really observe by getting close to the trees and plants. By talking about the changes, the children are gaining images of the blossoming of Spring. Their drawings are full of details because I think they have clear images of the gradual growth of living things. We did not draw after our first visit outside because the children needed more time to build images which enrich drawings.

The week after our third visit, we read the story of "Jack and the Beanstalk." We talked about the "magic" seeds and compared that happening to what we had seen during our walks. The children were quite familiar with this story, so after a rereading and telling the next day, we decided to dramatize some of the interesting parts. A few days later the children selected parts of the story to draw and label. One group of children used four large sheets of newsprint to draw the beanstalk!

In my last letter on beginning writing, I made several suggestions on activities you could do to encourage writing and drawing at home. In addition, I wish to encourage you to buy a separate tablet that your child could take on family trips. Your child could draw some of the scenes and objects you encounter. The tablet becomes a "diary" of the trip, especially if you or older siblings help the child label what and where the events took place.

Drawing really becomes another language for children. You recall from your history courses that some primitive peoples who had no written language would communicate through drawings. Some of these drawings have been preserved in caves for thousands of years. I know what you are thinking -- you, too, treasure your children's drawings.

Some children at kindergarten age still persist in scribbling. If your child persists in scribbling, perhaps you can encourage her or him by picking out some part of the scribbling that seems interesting. You might say, "What is happening here?" in order to show the child that you are interested in the "drawing." Also, you may wish to suggest that your child make a book of drawings to capture the highlights of a favorite bedtime book. The child could tell you story from the book of drawings.

Please feel free to contact me if you have any questions about your child's drawings or writings about the drawings.

Sincerely,
Your child's teacher

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# The Role of Choice in the Literacy Development of Young Children

DANIEL R. MEIER

This article presents a theoretical framework for viewing the role of student choice in the literacy development of young children. Grounded in notions of language and literacy learning as intimately connected with children's social and cultural resources, the article discusses ways that teachers and educators can create opportunities for children's choice-making in early childhood and kindergarten settings. The author uses vignettes and examples from a kindergarten classroom to illustrate the ways that choice can become a central foundation for the literacy education of young children.

*DANTE:* *Frogs are poisonous.*

*ARTHUR:* *All animals are.*

*DANTE:* *Are zebras?*

*ARTHUR:* *No.*

Helen is a veteran, highly skilled early childhood teacher. In her kindergarten classroom, Dante and Arthur play with their written and drawn worlds as they talk and interact during choice time in their kindergarten classroom (Meier, 1994). The action and the heart of their work, their shared social and literacy learning, comes as much from each other as from the drawn page. Dante and Arthur, like other children in classrooms promoting opportunities to choose their own literacy activities and peer partners, gain valuable first-hand experience in choosing essential elements of their early literacy development.

As blossoming writers and artists, Dante and Arthur learn to make important choices regarding the content, language, voice, character, action, and symbolic representation of their early literacy work. They are playing and experimenting with basic, instrumental tools and symbols (Vygotsky, 1978) of language and literacy in their earliest school-based literacy experiences. In choosing elements of their literacy work — including the choice of tools, the length of engagement with an activity, ways of talking and interacting with peers — young children themselves are the ones controlling important aspects of their early literacy learning. In this

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paper, as shown in examples and vignettes from one kindergarten classroom, opportunities for choice-making involving real and meaningful choices do not result in choice without license and management chaos; the anecdotes reveal how carefully and sensitively crafted classroom organization and implementation provide safe, clearly established avenues and parameters for young children to make and honor choices in their literacy involvement.

Opportunities to make and honor choices about selection of activities, peer partners, and the nature of involvement play important roles in children's early social, intellectual and literacy development (Piaget, 1926; Berk & Winsler, 1995; Katz & Chard, 1989). In children's general social development, early experiences with making choices form a foundation for a more developed sense of independence, control, and self-esteem (Koplow, 1996; Edwards, 1986). In relation to literacy development, choice-making opportunities allow children to experience a wide variety of literacy activities across the early childhood curriculum according to their own personal and social interests, styles, and pacing (Cazden, 1981; Dyson, 1989, 1993, 1997).

Choice time, or activity time as it is also known, has a long and honored tradition in early childhood settings. It is the primary organizational vehicle for children to choose and control important elements of their early social and literacy experiences. Choice time is most often characterized by the offering of activity and peer partners, integration of literacy and artistic activities (like drawing, dictating, painting, using computers) and less literacy-based activities (like blocks and playhouse), freedom of physical movement between activity areas or centers, informal and one-to-one contact with adults, and integration of themes and projects (Katz & Chard, 1989) into choice time activities.

In this paper, however, choice will be discussed in two primary ways: 1) at the large, macro-level foundation of how teachers envision, structure, and implement choice-making opportunities for literacy learning and how children make conscious choices in selecting their peer activity partners, literacy activities, and materials; and 2) at the smaller, more micro-level in which children make "in-the-moment," often spontaneous decisions regarding the form, content, tenor, and direction of their literacy involvement in their drawing, talking, dictation, and book sharing. Both levels of choice-making are not mutually exclusive; rather they are complementary, both needing and nourishing each other as adults and children learn and teach each other about the role and varied forms that choice-making opportunities can take in children's early language and literacy development (Meier, 1997).

While the research directly examining children's literacy development during choice time is scant, related studies on children's language and literacy development do shed light on the importance of choice-making opportunities for children's early literacy involvement. One body of relevant research focuses on the social foundations of children's early language and literacy development (Vygotsky, 1978; Berk & Winsler, 1995; Wertsch, 1991; Dyson, 1993, 1994). This body of research indicates that children learn to control and direct their own behavior and actions and those of others through literacy engagement grounded in social interaction, talk, communication, and a sharing of resources, interests, and experiences.

Given this foundation of talk and interaction as promoting children's abilities to make choices in their language and literacy learning, how then can early childhood teachers and educators promote meaningful and relevant choice-making opportunities? First, teachers and other adults play pivotal roles in the choice-making process for children by carefully and sensitively structuring and framing choice-making opportunities (Meier, 1994; Paley, 1981, 1990). Second, children themselves can play active and pivotal roles in promoting choice in their social interaction (Corsaro, 1975) and early language and literacy learning (Carrasco, 1981). Third, choice-making opportunities promote active language and literacy learning (Paley, 1981, 1990) and allow children to bring their culturally and socially-based ways and expectations of talking and interacting into their literacy learning in schools (Dyson, 1989, 1993; Delpit, 1995).

## IN-THE-MOMENT CHOICE, LANGUAGE, AND SOCIAL INTERACTION

> *I was happy when I was little. We got a tiny little brown puppy. It is named Benji. It is big now. It is about five now, but it is not as big as the table yet.*
>
> - Julio's dictated autobiography

Julio is a kindergarten-aged child whose first language is Spanish and who is increasing his control and understanding of English. In the process of dictating his end-of-the-year autobiography to a parent volunteer, Julio benefits from linguistic and social interaction with the parent. According to the preeminent Russian intellectual and psychological thinker L.S. Vygotsky (1896-1934), for Julio and his fellow kindergarten classmates, talk and social interaction and play are powerful influences on children's social, linguistic, and intellectual development (Vygotsky, 1978, 1986; Wertsch, 1991; Berk & Winsler, 1995). For Vygotsky, children's intellectual and linguistic development is a dynamic process in which children, their peers, and adults play active roles as they work together to understand themselves, each other, and their worlds.

### *Language as Problem-Solving*

In Vygotsky's framework, language plays a central role in children's learning as a "problem-solving tool" (Vygotsky, 1978). Julio and his classmates use language to make socially and intellectually grounded choices that direct their own actions and those of others. These actions essentially constitute children's beginning attempts at controlling and shaping their inner thoughts and ideas. In dictating his autobiography, Julio works with the parent to shape the form and content of his literacy work through language in a shared social context. In a critical notion, Vygotsky differentiates between "social speech" and "inner speech" (Vygotsky, 1978). Generally defined, social speech is talk and language with and for other children and for adults, and inner speech is a more internal working of children's mental processes and relies less on words and other basic components of language.

Julio, then, is engaged with both social and inner speech in his autobiographical work; his social speech forms the words of his autobiographical text and his conversation with the parent, while his inner speech consists of the images and memories of "little brown puppy." In the middle ground of experimentation here, between inner speech and social speech, Julio gains valuable experience with choice-making in-the-moment; he plays at the edges of his inner words, experiences, images, and thoughts with the assistance of the adult by his side. Together, he and the adult make the little choices and changes of direction in his autobiography that promote an active, micro-level form of choice-making grounded in language and literacy. It is this kind of active promotion of opportunities for choice-making in social interaction and literacy text-making that makes use of the back-and-forth, dynamic movement between inner and social speech, and which can foster children's active involvement in their first and second language and literacy learning.

In the developmental changes from social speech to inner speech according to Vygotsky, children's language and thought occur on two different planes or levels of use: the "interpersonal" or between social interactants and the "intrapersonal" as an internal psychological process (Vygotsky, 1978). Language and social interaction play critical roles in this all-important process of children's social and intellectual development. In particular, in the movement toward inner speech, children learn to regulate and guide their own actions and thoughts in addition to directing and working with other children and adults.

In this process of socially and culturally grounded language and literacy work — as seen briefly in the interaction and in-the-moment choice-making of word and experience and thought in Julio's autobiography — children gain valuable experiences in shaping, creating, and recreating who they are on paper and in text. According to Vygotsky, children "learn to organize their own activities according to a social form of behavior" (1978, p. 27) which they had previously used with success in their social interactions with others. As a young child and as an English learner, Julio is gaining in communicative competence (Hymes, 1974), or learning the appropriate ways of interacting and talking in social and academic situations with others in his classroom. In linking the notion of Julio's emerging communicative competence in English with opportunities for in-the-moment choice-making, the social process of working with a parent on his autobiography, provides a social "training ground" for experimenting with and learning successful ways of using language and literacy. In this sense, Julio gains valuable lessons on how to make appropriate choices of both form and content in his literacy involvement through the close, personal contact with the parent.

### *Importance of Active Learning*

In Vygotskian-inspired frameworks, children are seen as active users and contributors to their environment and social worlds through talk and social interaction with peers and adults. Crucial to children's expanding opportunities for understanding themselves and their worlds is another key notion from Vygotsky: the "zone of proximal development" (Vygotsky, 1978). The term refers to the development space between what children can do independently in their thinking and their actions and what they can achieve with the assistance of more capable peers and adults. Simply put, what children can achieve today they can achieve with more sophistication and understanding through the help of others tomorrow. In this view, children develop more sophisticated and powerful ways of thinking and using language in close social connection with their peers and teachers.

Central to Vygotskian notions of a zone of learning and development is the related idea of scaffolding (Vygotsky, 1978, 1986; Cazden, 1988; Berk & Winsler, 1995; Bruner, 1986; Wertsch, 1991). The term refers to the guided, cooperative way that children and adults can work together on a task or activity. In joint participation (Rogoff, 1990), working on a collaborative language or literacy task, children and adults guide and push each other to a more complicated understanding of the task at hand. For Julio, the parent's questions about the content of his autobiography — "What is your puppy's name?" "How old is he now?" "Is he as big as this table?" "I'm going to reread what you dictated, and you tell me if you want to change anything." — spur on Julio to craft a more detailed, a more lively autobiographical sketch.

Language and social interaction as guided by the adult are central to the joint scaffolding or building of the shared literacy activity. Most importantly in this process, the adult helps Julio realize and become more aware of the array of possible choices regarding the form, content, and structure he might choose for his end-of-kindergarten autobiography. As the parent questions and inquires, Julio thinks of more events and information he can add to his story, thus increasing the content and creating a more involved and interesting work. For instance, the parent asks content questions about Julio's memories of when he was little and shapes the form and structure of his oral language text onto the written page. This joint playing with the shape and form of the content and its text structure can occur during the initial taking down of Julio's dictation, and it reoccurs when an adult reads the autobiography back to Julio and he draws his depiction of each page.

As seen in the example of Julio and his autobiography, Vygotsky's views emphasize the importance of promoting children's growing control over the tools of their social interaction and language and literacy learning. With greater control, and guided direction and cooperation from peers and adults, children gain valuable early experiences in how in-the-moment choice plays a central role in their literacy development.

## CLASSROOM ORGANIZATION, CURRICULUM, CHOICE-MAKING AT THE MACRO LEVEL

> *In the beginning of the school year, I start out only with an activity period with general activities. The first day I take the children around the room for a tour. I say, "This is the writing table. This is where you write." They look at that little round table, and I show them construction-covered blank books and I say, "This is what you write on. You put your name on the book and then you get to use it anytime you want to come over here and write. When it's your turn at the writing table, you use the book with your name on it." That's all the introduction I give to that.*
>
> — Helen, veteran early childhood teacher

Early childhood educators play critical roles in creating and maintaining opportunities for children to choose their peer partners and language and literacy activities (Meier, 1994). In this process, teachers structure the participation boundaries for choice-making and expertly guide children's social and literacy involvement. Given opportunities to take the initiative with peers, children take active roles in furthering their own social and intellectual development (Carrasco, 1981). Children also take advantage of opportunities for social interaction to forge and maintain contact and friendships with peers (Corsaro, 1985).

### *The Importance of Adult Guidance*

Early childhood educators like Helen organize and guide children's participation in choice time activities to further their social and intellectual learning through interaction with peers. By affording children meaningful and daily opportunities to talk and interact, educators help promote children's active involvement in each other's social and literate lives. Choice-making opportunities, then, allow children to participate in activities according to where they are developmentally.

For instance, as conceived and constructed in Helen's kindergarten, meaningful opportunities for choice and control have an underlying educational value (Meier, 1994). In the spirit of a developmentally-based classroom (Bredekamp & Copple, 1997), Helen connects choice and control with the value of children taking active roles in contributing to their own social, personal, and intellectual development. In encouraging children to choose important aspects of their social and academic life, Helen provides crucial early training in learning to make and honor choices in the classroom.

According to Helen, "The children have choices from day one." Helen carefully and deliberately guides her students on how to participate successfully in a classroom valuing and promoting children's choice-making possibilities. Helen crafts opportunities for children's choices with particular educational and social goals in mind and emphasizes the open-ended, creative aspect of activity choices that allow for individual variation. Starting at the beginning of the school year, and continuing over the course of kindergarten, Helen expertly adds and introduces more and more literacy and nonliteracy-based activities as she guides the children's participation in her classroom. In creating an ever-widening and more complex array of activity choices over time, Helen shapes the children's "history of involvement" (Meier, 1994) with both the activities, themselves as learners, and each other.

Relying on careful and sensitive teacher intuition, observation, and reflection, Helen connects opportunities for choice-making with children's feelings of success and competence. For instance, at the beginning of the year Helen maximizes children's success with activities in deliberate ways.

> *When I start introducing art activities, I introduce activities that I know are going to be very attractive and easy. They are usually non-representational, so it isn't a question of having to be able to draw something specific. Early in the year I do marble painting, chalk and water, paint drops, all things I think of as the 'happy accident' school of art; everybody's successful and you can say very honestly to a child, "That's beautiful" rather than "oh, what a nice horse," and he says, "It's not a horse. It's my brother."*

Helen also links opportunities to make choices with the range of ways children learn as individuals and build community. As they choose activities and peer partners, and learn to participate successfully in choice time, Helen talks with the children about how "people are different, and how their feelings are different, they think differently, and so of course we don't expect their work to all look alike."

### *Development of Communicative Competence*

Communicative competence (Hymes, 1974; Lindfors, 1991; Cazden, 1988) encompasses the social, cultural, and personal ways in which children use language in social settings. In developing their communicative competence, children learn to see the influence of language on their own behavior and on the actions, feelings, and thoughts of peers and adults. Julio, who has never worked on the literacy activity of an autobiography, experiments with the medium and his social partner (the parent) in developing a pleasing and satisfactory literacy piece. As noted earlier, in the process of creating the text and the pictures and working with the adult, Julio also furthers his own developing communicative competence around literacy activities in his kindergarten.

The organization of classroom activities and events (Cazden, 1988; Mehan, 1979), or the ways that lessons are structured, and of participant structures (Philips, 1972), or the grouping of students for instruction and interaction, are two powerful influences on the opportunities for children to display and develop their communicative competence. In settings which facilitate the process of helping and supporting children to make important choices in their social interaction and literacy involvement, children gain early experiences in furthering their social and intellectual development.

Carrasco (1981) points to the increased opportunities to develop communicative competence for one kindergartner during a choice time event. In studying a Spanish/English bilingual program with a multicultural curriculum, Carrasco shows how a child named Lupita actively and expertly helps her peers solve problems in their free choice time work. In this process, the child learns valuable new ways to show and demonstrate in a public way the varied ways of successfully interacting and working with her peers. Carrasco also argues that the choice time event, with its built-in opportunities for increased socialization and interaction, also benefit Lupita's teacher by providing the teacher with an alternate view and window onto Lupita's skills and competence. Lupita's peer interactions are described with a range of verbs: "helped, taught, showed, asked, turned, continued, directed, noticed, approached, knelt, took command" (p. 168). These actions are part of the "active stances" Lupita takes in helping her peers, and Carrasco argues that these stances are based on the willingness of her peers to be helped and taught.

In short, Lupita's peers sanction Lupita's growing communicative competence through their verbal and nonverbal interactions during the choice time event. The free choice time, with its opportunities for Lupita to work the room and interact and work with peers, promotes expanded possibilities for Lupita to take an active role in working and interacting with her peers. Out of earshot of the teacher, and not confined to a whole class teacher-led activity or event, Lupita has the freedom of time, space, and interaction to choose the form and content of her work-related interactions with peers, and thus gains valuable practice and experience in furthering her communicative competence as a young child in school.

In linking this study with Vygotskian notions, there are important connections between the richness of opportunities for children to help each other (Vygotsky's zone of proximal development and scaffolding) and children's development of communicative competence in early childhood settings (Lupita's active stances with her peers). Further, by "agreeing" to Lupita's active social assistance, her own peers sanction the particular ways that Lupita has chosen to help. An essential element of communicative competence, then, involves creating and refining classroom event structures like choice and activity time that encourage children to work together and help each other to fit into and be comfortable with each other's social and linguistic expectations, interests, and talents.

### *Promoting the Peer Culture*

In helping peers, Lupita helps strengthen children's social and intellectual connections within their "peer culture" (Corsaro, 1985). Opportunities for children to choose activities and peer partners affords children an important measure of control over their social interaction and peer contact. According to Corsaro (1985), children forge the peer culture partially from their "perceptions of, and reactions, to the adult world" and also from children's shared "activities, concerns, values" (p. 172). Early childhood settings which promote choice-making opportunities, then, encourage children to share activities and enjoy each other's company according to their own interests, likes, and resources. By promoting a measure of control in choice-time events and activities, children like Julio and Lupita can more actively direct their own participation in social interaction and language and literacy activities.

Further, children promote their shared peer culture through the use of certain behavioral routines (Corsaro, 1985), which are repeated and patterned ways of talking and interacting with each other. For example, in the children's dramatic play, children make use of certain requests for joint action which are scripts or shared plans for guiding their interaction together (Corsaro, 1985). Scripts (Hatch, 1992) and structured linguistic formats, like those found in teacher-directed meeting times and story reading and in child-initiated play and language routines, allow a predictable foundation for children to create novel uses and avenues for language and literacy learning. As with Lupita, children can make good use of choice-making opportunities in working with and helping their peers. And a good deal of self-satisfaction and learning about themselves, each other, and their world comes about through this kind of child-initiated assistance and interaction.

## MAKING ROOM FOR CHILDREN'S LITERACY RESOURCES

> *When I was four I went to the zoo. I saw big giant animals. They all have color animals. I saw snakes. They are my favorite animals. They are sneaky when they bite you. I took pictures of all the animals.*
> — Dante, a kindergartner,
> dictating his autobiography

In promoting feelings of success and competence with language and literacy activities in diverse early childhood settings, children need adequate social and intellectual space for the varied cultural ways of talking, socializing, and using written language.

### *Children's Perspectives and Stories*

Vivian Paley (1981, 1990), the veteran kindergarten teacher and sensitive and keen observer of young children's language and literary talents, argues for the value of taking into account children's own social and intellectual perspectives in shaping the role of choice in the language and literacy environment for young children. Paley's classroom provides one kind of model for further examining the interweaving of the more macro, larger form of choice-making in terms of curriculum and classroom organization as well as the more micro, more in-the-moment aspect of children's choice and selection of the form and content of their language and literacy work.

Crucial to Paley's view of facilitating and promoting the making and honoring of real choices for young children is the active involvement of children in their own literacy learning and the active choice-making and selection which individual children make for themselves. Paley's classroom can be characterized as an active, child-oriented learning environment in which children are encouraged to make choices regarding their peer partners and activities as well as the smaller, more in-the-moment choices regarding their language and literacy involvement. For instance, a great emphasis is placed on valuing and promoting children's original stories, which are often dramatized as children choose their props, scripts, and characters in performances with and for the other children. In creating their own stories, and choosing peers as actors in these child-created stories, children in Paley's kindergarten have ongoing opportunities for taking the initiative in shaping the content and form of their early literary stories, and for also actively choosing how and with whom their stories will be performed and brought to life. In this way, the children gain valuable experiences — as Lupita did in Carrasco's study — in taking an active role in creating and shaping the content of their social and intellectual interactions with peers in the very public forum of the early childhood classroom.

In the spirit of Vygotsky's emphasis on children's active learning and problem-solving using language, Paley's stories and research on children's use of storytelling and drama show how social interaction and language and literacy involvement are bound by the important choices that children make about story content, character, plot, reenactment, and performance. As children shape and reshape and dramatize their stories, as promoted by the structure of the classroom, they gain valuable experience in understanding the inner workings and the uses of language literacy and using their collective peer resources to problem-solve and work together.

### *Children as Social Actors and Symbol Users*

Dyson's work (1989, 1993, 1994) embeds children's talk and social interaction within the particular social and academic worlds of early childhood classrooms. For Dyson, there is an ongoing and dynamic interplay between children's "multiple worlds" (1989) of symbols, experience, ideas, and feelings which children represent in their drawing and writing and discuss in their social interactions with peers. Children become interested in literacy activities, then, partly through their social engagement with their peers and partly through the symbolic power of their literacy work.

Crucial to Dyson's view of children's active and social engagement with literacy, in their work as "social actors" and "symbol users" (1989, 1993), are the range of resources which children bring to literacy activities in early childhood classrooms. In this way, children from varied linguistic and cultural backgrounds enter literacy situations in schools with their own "sociocultural" or accustomed ways of talking, interacting, and approaching and using literacy. In their literacy work, then, children make use of their own individual styles and cultural resources to manipulate the array of symbolic and "real" worlds — the world represented on the drawn and written page, the world of their imagination, the immediate social world of the classroom, and the larger experienced world outside.

For Dyson, children's writing "is not simply made socially sensitive by the response of others; it is itself a social act, a way of interacting with others" (1993, p. 7). In this view, children's literacy work is embedded or grounded in the social and peer worlds of classrooms and becomes a prime social force for children's social bonds and connections. An essential challenge, then, for teachers is to make enough room and opportunities for children from diverse backgrounds to use their strengths and accustomed ways of talking, interacting, and approaching literacy to succeed in the classroom and school.

In promoting what Dyson (1993) calls "the permeable curriculum," teachers shape the social organization of the classroom and the opportunities for talking and interacting for maximum involvement of children's linguistic, social, and literacy resources. In this way, children will have the benefit of bringing more and more of their resources and talents and interests to bear on their literacy learning. A "permeable curriculum," or "social skill and cultural roots needing curricular space" (1994), foster opportunities for children to choose and control important aspects of their socialization and literacy learning during their early school years.

Dyson, then, provides an excellent practical and theoretically-based body of work that carefully illustrates and analyzes key intersections between opportunities for child choice at both the organizational, macro and the in-the-moment, micro levels of choice-making opportunities. It is in the initial classroom organization of social interaction and access to the curriculum, as seen in the notion of Dyson's permeable curriculum, as well as in the momentary guiding and framing by expert educators that children are provided with a depth and breadth of rich, meaningful and satisfying opportunities and experiences for choosing and participating in significant language and literacy activities.

## FUTURE DIRECTIONS FOR ENVISIONING THE ROLE OF CHOICE IN CHILDREN'S LITERACY EDUCATION

Early childhood settings are experiencing rapid changes in social and age groupings. Multi-age groupings have become more popular and lower class sizes in grades kindergarten through grade-three, as recently shown in California, offer new opportunities to study and implement choice-making opportunities for young children. Given the discussion in this article, there are a number of interesting avenues for future theory, research, and practice regarding the role of choice in the literacy education of young children:

- How can teachers organize and implement varied versions of the choice time event that meet the social, cultural, and educational needs of their children and families?
- How can elements of choice be included in classroom organization and literacy curriculum while simultaneously honoring and acknowledging the local perspectives of teachers and families regarding childhood socialization and literacy education?

- What is the role of opportunities for children to choose peer partners and literacy activities in the process of helping and guiding young children across potential boundaries as marked by gender, language, ethnicity, and literacy resources and expectations ?
- What kinds of support can we provide beginning teachers, and how can we make use of the knowledge and expertise of veteran teachers in fashioning classrooms featuring real, viable opportunities for children's choice-making? In terms of the implications for teacher education, how do beginning and veteran teachers approach the issue of choice in their classrooms?
- How can versions of choice-making opportunities contribute to first language maintenance and language and literacy development in a second language? To what extent do opportunities for social interaction, talk, and child-initiated control over the selection of peer partners and activities promote successful literacy involvement in more than one language?
- How can choice-making opportunities be implemented in classrooms for children with disabilities? What is the contribution of theoretical notions and practical methods from such related fields as special education?
- What are the perspectives of parents and families regarding the issue of choice in the literacy learning of young children? How can parents play greater roles in creating and guiding children's choice-making options and opportunities?

These are but several possible directions for future research, theory, and practice as we continue to examine the value, and the potential pitfalls, of research and practice in the area of opportunities for child choice and children's literacy learning during their early school years.

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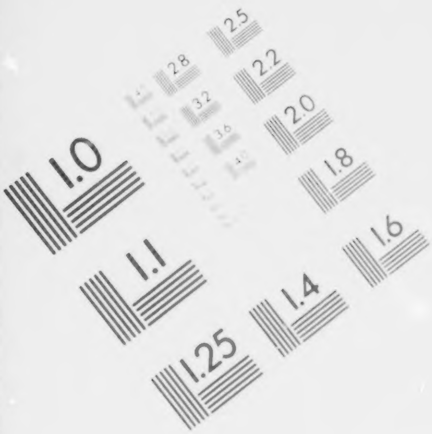
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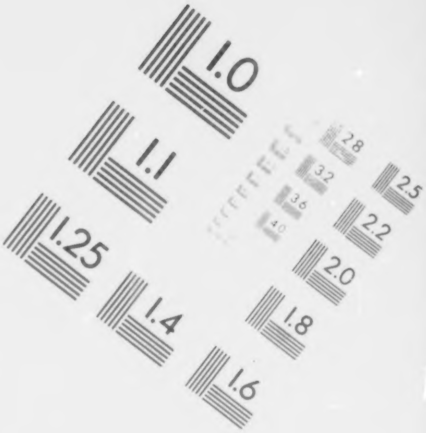
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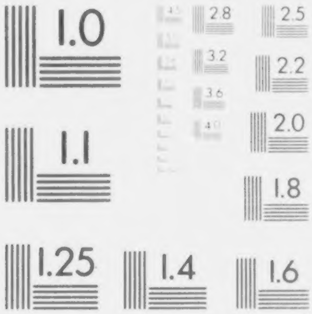
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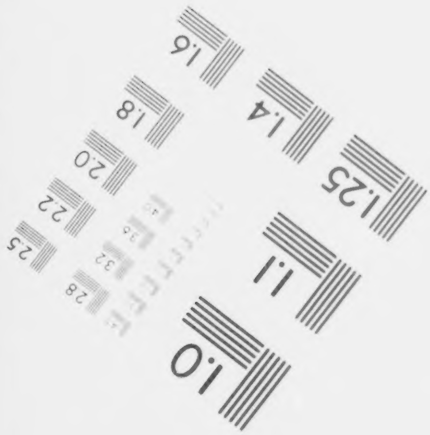
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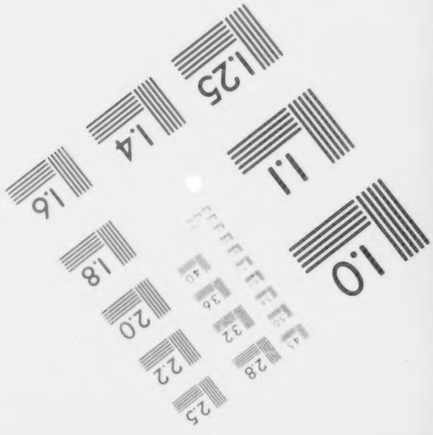
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# Kindergarten Policies: Another Look at the Research

Diana Wright Guerin, Julie C. Sandwell and Lisa Thaddeus Lovil

Recent research on five kindergarten policy issues, the "birthdate effect," entrance age policies, the practice of voluntarily delaying kindergarten for age-eligible children, early grade repetition, and readiness testing, is reviewed, using as a starting point the research synthesis published by Shepard and Smith (1986). Specific issues are addressed. Recent research supports and extends the conclusions of Shepard and Smith. Two suggestions to improve the preparedness of children for kindergarten are endorsed: quality preschool/public education at age 3 and effective communication between schools and parents.

Currently, children in California may be enrolled in publicly-supported kindergarten at the beginning of a school year, or at any time later in the same year, if they have their fifth birthday on or before December 2 of that school year. During the 1997-98 California Legislative session, a proposal to raise the age at which California's children may enroll in public kindergarten was introduced. This was the third attempt in the past dozen years to raise the age at which children are entitled to enter kindergarten in California. In 1985, Assembly Bill (AB) 2569 failed in the Assembly. In 1992, when California faced a budget deficit, the governor proposed a similar change as part of his annual budget proposal. This proposal also failed. The most recent attempt, AB 85, failed to pass out of the Assembly Committee on Education in January 1998. Specifically, AB 85 proposed to change the cut-off date for kindergarten admission from December 2 to September 1 over a three-year period. The rationale for this change, cited in Section 1 of AB 85, was as follows: "By changing the age at which children generally enter kindergarten, California's children will be better prepared to enter into the academic environment that is required by the kindergarten curriculum." Is changing the kindergarten entrance age in the best interest of California's children? In this article, we review the empirical research and recommendations published in professional and research journals addressing this important public policy.

## PREVIOUS SYNTHESIS OF RESEARCH: 1986

The last major synthesis of research on kindergarten entrance issues, which has been widely cited in both research and policy arenas, was published over a decade ago. Writing in the journal *Educational Leadership*, Shepard and Smith (1986) summarized the extant research addressing five major issues relating to school readiness (also see Crnic & Lamberty, 1994; Kagan, 1990) and kindergarten entrance: the birth date effect

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(comparisons of youngest and oldest pupils within a grade), entrance-age policies, the practice of voluntarily delaying kindergarten entry one year, readiness testing for school, and kindergarten/first grade retention. Their conclusions are summarized in Table 1. Numerous studies addressing these issues have been published since Shepard and Smith's erudite synthesis, and our purpose in this article is to determine whether studies published since Shepard and Smith suggest the same or different public policy directions for publicly-funded kindergarten.

*Table 1. Conclusions Drawn in Previous Synthesis of Research on Kindergarten Policies (Shepard & Smith, 1986)*

| Issue | Conclusion |
|---|---|
| Birth Date Effect | Children who are the youngest in their class have slightly (but often statistically significant) lower achievement rates than children who are the oldest. The difference is generally 7 to 8 percentile points and often disappears by third grade. |
| Entrance-Age Policy | The entrance age for kindergarten has increased gradually over the past several decades. In 1958, most states required kindergartners to turn 5 by December 1 or January 1; by 1985 the typical cut-off date had moved forward to October 1. These changes have raised the average age of kindergartners. |
| Voluntarily Delaying Kindergarten Entry | Little research evidence exists to inform parents about whether to delay entry of age-eligible children for one year. This practice increases the age variation in the kindergarten classroom, making it more difficult for teachers to meet increasingly diverse student needs. |
| Testing Readiness for School | No instruments are available to accurately screen individual children without unacceptably high error rates. |
| Kindergarten/First Grade Retention | There is no evidence that retaining children in early grades benefits their achievement, although they do have more negative feelings about school. |

## RESEARCH COMPARING YOUNGEST AND OLDEST WITHIN A GRADE

As noted by Shepard and Smith (1986), the tendency for the youngest children in the early grades to perform less well than their oldest classmates has been demonstrated in numerous studies. This difference is not consistently observed and has been found by some researchers to diminish by third or fourth grade. Studies published since Shepard and Smith's review have yielded similar conflicting findings. In Israel, Breznitz and Teltsch (1989) compared the youngest (*n* = 64 born October through December) and oldest (*n* = 73 born between January and March) children when they were in first grade and then again when they were in fourth grade. In first grade, the oldest children performed significantly better on reading comprehension, reading time, decoding, and arithmetic skills. Followed into fourth grade, the oldest continued to outperform the youngest children on reading comprehension, reading speed, and arithmetic. Groups did not differ on oral reading errors. In terms of adjustment, the advantage of the oldest students that was observed in first grade had disappeared by fourth grade where the groups did not differ on three of the four socio-emotional measures (sociometric status, state anxiety, self-image); the oldest showed lower trait anxiety than the youngest, however. DeMeis and Stearns (1992), studying children in New York, did not find increased risk of academic or social difficulties between older and younger age-eligible children. Referrals for psycho-educational evaluation were generally proportional to the rate of births in the overall school district population. Although significantly more of the older students within a grade were referred for gifted evaluation, proportionally similar numbers of younger compared to older students actually qualified for placement in gifted education. However, younger children were more often placed in pre-first grade. DeMeis and Stearns concluded that sex was a more significant variable in school entrance decisions than age at entrance, with boys' entrance more frequently delayed. Cryan, Sheehan, Wiechel, and Bandy-Hedden (1992), studying school records of over 8,200 children in Ohio, concluded it was "quite risky to be a 'Summer Child'" (p. 201). They reported increased probabilities for retention and for referral for special education services. Spitzer, Cupp, and Parke (1995) studied the social acceptance and self- perceptions of over 500 ethnically diverse kindergartners from 42 classrooms in 9 schools in 2 southern California school districts. Comparing children by age quartiles, Spitzer et al. found few significant differences between the youngest and oldest groups. At age 5, differences favoring the older children were found in teacher ratings and peer nominations. However, no differences were observed in peer ratings, report cards, teaching ratings on an inventory of classroom behavior, or on self-reports of the children themselves. A subsample of students, studied again one year later in first grade, showed no differences on loneliness, self-perceived competence, or school adjustment. Spitzer et al. concluded that the preponderance of evidence indicated that younger children were not at a social disadvantage. In a cross-sectional study of children in grades 3, 4, and 5 in Malta, Borg and Falzon (1995) found that, within a grade level, older children outperformed younger children on three academic subject areas; they also found marked gender differences favoring girls. Flynn, Rahbar, and Bernstein (1996) failed to find a significant relationship between season of birth and reading disability among two cohorts of second graders numbering approximately 2,000 students each.

Hence, conflicting findings regarding what has been labeled the "birth date effect," "youngness problem," or "age effect" continue. As long as a single entrance date is used, children in kindergarten will differ by at least 364 days in age (or more when entry of age-eligible children is delayed). Given that one year represents such a large proportion of the life experience of five-year-olds (approximately 20%), it is not surprising that some studies detect a difference in the performance of the youngest versus oldest kindergartners. But this issue is not relevant when considering bills such as AB 85, because changing the entrance date does not reduce the age variation within a grade level. Children will still differ by approximately one year regardless of the particular cutoff date employed. At the lower grade levels, differences between the youngest and oldest will most likely still be evident because these differences occur due to children's age *relative* to their peers rather than to their *absolute* age; changing the entrance date simply creates a new youngest group and a new oldest group. Hence, short of creating two or more kindergarten entrance dates each year, measurable differences between the youngest and the oldest in the early grades will likely continue. There is substantial variability in the rate of children's normal development, particularly in a society as diverse as that of the United States. In addition to individual differences in the developmental rates of children, diversity in their early life experiences contributes to the range of normal variability presented at the school house door. Nature and nurture contribute to the heterogeneity of pupils in the kindergarten classroom, and public policies to address differences in readiness for academic and/or social demands of formal education must address both of these factors.

## ENTRANCE-AGE POLICIES

Shepard and Smith (1986) reported that kindergarten entrance age requirements had gradually increased over the past several decades, moving from a December 1 or January 1 cut-off date in the late 1950's to a dominant practice of requiring children to be 5 years before October 1.

More recent data (Education Commission of the States, 1997) show that the most common cut-off date is now September 1, used by 17 states. Over thirty states now require children to turn 5 by September 30 to be eligible for kindergarten that academic year. Indiana and Missouri have the earliest cut-off dates; children must turn 5 by June 1 and July 1, respectively. Thus, entrance age requirements have continued to increase over the decade since Shepard and Smith's assessment.

## VOLUNTARILY DELAYING KINDERGARTEN ENTRY

Shepard and Smith (1986) noted that many parents whose children had birthdays near the cut-off date were opting to delay their children's school entry, believing their children would than benefit from being the oldest in their class. Finding no controlled studies on children with delayed entry, Shepard and Smith advised caution, citing possible negative effects of being over-age for grade such as reduced motivation, insufficient challenge, or feeling different from peers (for example, due to reaching physical maturation before grade-mates). In addition to cautioning parents about the unknown effects of delaying school entry for the children held out, Shepard and Smith encouraged school districts *not* to advise parents to delay entering their age-eligible children. Such a practice may actually further increase the heterogeneity of students in kindergarten, because the parents most likely to know of and take advantage of this practice have children who would probably benefit the least from delaying school entry (specifically, children in middle-class families who have had preschool experience). Since Shepard and Smith's review, several studies have addressed the issue of voluntarily delaying entry or holding out age-eligible children.

Holding out rates have been found to vary over time, by gender of child, and by demographic characteristics. Bellisimo, Sacks, and Mergendoller (1995) examined the prevalence of holding children out of kindergarten in a northern California county during the 1988-89 and 1991-92 academic years. The rates for boys and girls differed, although both showed a decline over time. For boys, the rate dropped from 19.3% to 11.4% over the course of the investigation; for girls, the respective rates were 9.1% to 3.7%. Schools whose families had higher socioeconomic status (SES) showed higher holding-out rates for boys. Brent, May, and Kundert (1996) also found kindergarten entrance delayed significantly more often for boys than girls in New York. Cosden, Zimmer, and Tuss (1993), examining hold-out rates in three southern California school districts, found results varied by district. However, when differences were observed, those most likely to be held out included boys, Anglo versus Latino students, and the youngest students.

Studies have also appeared that address Shepard and Smith's concerns about the practice of voluntarily holding children out and the resulting effects on children's educational and developmental progress. In evaluating these findings, it is important to examine carefully the groups being compared. The typical comparison is between children of like age who entered school when first eligible (making them the youngest in their grade) and those who entered one year later and were thus the oldest in their grade. But should the comparison be made between these two groups based on measures taken when they are the same *age* or the same *grade*? Figure 1 displays possible comparisons to investigate the practice of delaying children's school entry. Should the "entered" versus "held out" kindergarten groups be compared when they are the same age (as represented by

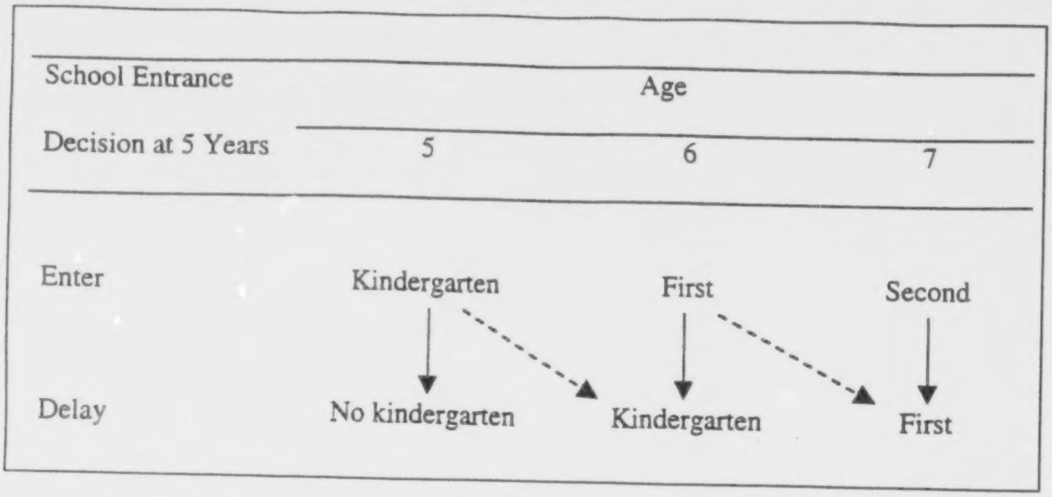

*Figure 1. Possible Comparison Strategies in Studies on Delaying School Entry: Age (Solid Arrows) versus Grade (Dashed Arrows)*

solid arrows) or when they have completed the same grade level (dashed arrows)? Conclusions may well vary depending on which comparison strategy is used.

Two studies employing the grade comparison strategy appear in the literature. Sheehan, Cryan, Weichel, and Bandy (1991), examining data from cumulative files of pupils in 32 Ohio school districts with a September 30 cut-off date, compared the test performance of students with summer birth dates who entered kindergarten as late fours to those of pupils with summer birth dates whose kindergarten entry was delayed until they were late fives. Those with delayed entrance performed better on standardized tests in kindergarten and first grade, had fewer Chapter 1 placements, and lower rates of grade retention. However, by second and third grade achievement test differences had narrowed or reversed. Using groups matched for ability, Crosser (1991) found that summer birth date children who entered kindergarten at age 6 scored significantly higher than summer birth date children who entered kindergarten at age 5 on composite scores of achievement tests administered at 5th or 6th grade. While no differences were observed on math subscores for either gender or on reading subscores for girls, older boys scored significantly higher on reading subscores (9 percentile points higher) than younger boys.

A more recent study employed both age and grade comparison strategies displayed in Figure 1. Morrison, Griffith, and Alberts (1997) compared progress in reading and math over a school year of children differing on grade, on age, and on grade and age. The children attended public schools in a moderately large city in western Canada, where children must turn 5 years of age by March 1 to enter kindergarten the previous September. The groups compared were as follows: old kindergartners, young first-graders, and old first-graders. The old kindergartners ($n$ = 126) were defined as those with birth dates within 2 months *following* the March 1 cutoff. Young first-graders ($n$ = 152) had birth dates within the 2 months *prior* to March 1. Old first graders ($n$ = 114) were identical to the old kindergartners, but were a year older. The average ages of the three groups at the beginning of the school year were 65, 67, and 77 months, respectively. These three groups did not differ significantly on background characteristics such as child IQ, day-care experience, paternal and maternal education, paternal occupation, maternal employment status, number of siblings, or single-parent homes. One difference detected, however, was that mothers of young first graders had higher occupational status than mothers of children in the other two groups. Aside from this one variable, the three groups were quite similar in terms of background.

How did these three groups fare through the course of one academic year? In terms of reading, pretest scores revealed small but statistically reliable differences among the groups, with old first-graders outperforming young first-graders, who then outperformed the old kindergartners. The posttest scores showed a similar ordering among the three groups; however, whereas the young and old first-graders displayed small but significant differences favoring the old first-graders, on the posttest both groups of first-graders showed markedly superior performance compared to the old kindergartners. In other words, the degree of improvement in reading scores was reliably greater for both young and old first graders compared to that of kindergartners. A similar pattern resulted for mathematics achievement test scores. Hence, although the young first-graders started and ended the academic year performing significantly lower than their older classmates, they showed just as much *growth* in reading and mathematics as the older first-graders. Furthermore, they made more progress than the old kindergarten group.

Another recent study addresses the concerns raised by Shepard and Smith regarding the possiblity that problems might emerge in the long term when age-eligible children's school entry is delayed. Byrd, Weitzman, and Auinger (1997) used cross-sectional analyses of data in the Child Health Supplement of the 1988 National Health Interview Survey to investigate whether students who were old-for-grade had higher rates of reported behavior problems. They classified students (ranging in age from 7 to 17 years) who were older than the modal age for their grade as old-for-grade. Being old-for-grade could result from being retained (54%) or from delay in school entry (46%). Behavior problems were measured via parent reports on the Behavior Problem Index (BPI), a standardized scale with 32 items. BPI scores above the 90th percentile for each age were classified as extreme. The lowest rates of extreme BPI scores were observed for children who were neither old-for-grade nor retained (7%); the highest rates of extreme BPI scores were observed among children who were old-for-grade and retained (19%). Of particular concern to the issue of delaying kindergarten entrance, however, is the finding that 12% of children who were old-for-grade but not retained (delayed school entry) had extreme BPI scores. Furthermore, this rate increased with age so that by adolescence the rates for the delayed school entry group were approaching those of the highest risk group (old-for-grade/retained one or more grades). In the 14- to 17-year age group, old-for-grade was associated with extreme BPI scores even without grade retention. These authors concluded that there may be latent disadvantages that are not evident until high school for children who are older than their classmates. The processes posited to explain these elevated risk patterns include alteration of the formation of peer relationships, comparatively early onset of biological maturation with respect to same-grade peers, or delays in the detection and treatment of developmental delays/ learning disabilities.

These recent empirical studies contribute significantly to our understanding of the naturally-occurring sequelae of various factors on children's developmental progress. As is so often the case when studying risk factors in children's development, the factors investigated are not amenable to the types of research designs that permit the delineation of cause-effect relationships (i.e., true experiments). Thus, the limits as well as the contributions of these studies must be carefully considered. The first three studies on the rates of holding children out of kindergarten demonstrate that parental decisions are not randomly distributed, but instead relate to a number of factors including their child's sex, their child's age compared to the cut-off date, and ethnicity. Furthermore, rates vary across time, being more popular in some periods than others. It is also possible, as suggested by Shepard and Smith, that family SES may play a role in such decisions; in the study by Morrison et al., mothers of young first graders had higher occupational status scores than mothers of children in the old first grade or old kindergarten groups. One possible interpretation of this finding is that the children in the young first grade group were enrolled in school at the earliest possible age because their mothers worked outside the home (thus, their higher occupational status compared to mothers not employed outside the home). It is important to be mindful of the variables associated with entering or delaying kindergarten because they are also potential explanations for differences between groups of children who enter kindergarten on-time versus delayed. For example, in the studies reported by Sheehan et al. and Crosser, advantages observed in the delayed entry group may be due to demographic variables that differentiate the groups as well as, or instead of, the delayed or on-time entrance into kindergarten (as the authors carefully discuss). These factors may interact to yield small subgroups of children who are at significantly higher risk for poor academic/social progress in school, such as younger children with lower levels of intellectual ability.

Limited follow-up periods also represent a significant limitation of our knowledge base in this area. To detect problems that may surface later with increasing academic demands (such as in adolescence) requires long-term longitudinal studies, which have yet to be reported. The findings of Byrd et al. are based on cross-sectional survey data relying on retrospective parental reports. As Byrd et al. point out, the temporal relationships inferred by rising rates of extreme behavior problem scores paired with increasing age may be due to cohort or other effects rather than resulting from delaying school entry. Factors that lead parents to delay their children's entry into kindergarten may also be responsible for the increasing differentiation of the old-for-grade/not retained group. A longitudinal study spanning early childhood through high school graduation would be a significant contribution in helping to understand the factors leading up to school entrance decisions and their sequelae, especially one examining both academic and social/behavioral criterion variables. Such a study might also shed light on whether differences between youngest and oldest children within a grade and between children whose entry is delayed versus on-time disappear across time. Do the groups tend to converge due to (1) differential retention rates—more low-performing students being retained in the on-time entry group and therefore dropping out of the cross-time comparisons, (2) the higher-performing groups moving downward toward the lower performing groups, (3) the lower-performing groups moving upward toward the higher-performing groups, or (4) both groups moving toward each other in performance?

Most researchers conclude that children's kindergarten entry should not be delayed. Brent et al. (1996) warn that delaying kindergarten entry negatively impacts children in all SES groups because it further increases the developmental and academic diversity of kindergarten students (see also Shepard & Smith, 1986). Children from upper and middle class families, who may have had enrichment activities including preschool, are prepared and should not be held out; children from lower SES families should not be held out because they need the school experiences to support their development. Holding children out of kindergarten may contribute to stepping up the academic demands within kindergarten classes, because the preponderant group of students in the kindergarten class would be older. Over a period of time, kindergarten programs would change to meet the needs of the older group of students (Cosden et al., 1993; Crnic & Lamberty, 1994); thus, changes in the classroom may be particularly harmful for children entering kindergarten with fewer skills. DeMeis and Stearns (1992) noted that regardless of age, all students should have access to psychological and educational services to avoid potential long-term problems, such as environmental or handicapping conditions. By delaying kindergarten entry, children's access to diagnostic and/or remedial services would be delayed as well.

## READINESS TESTING

Shepard and Smith (1986) concluded that no test with suitable accuracy for kindergarten screening with less that a 50 percent error rate was then available. Although evidence to the contrary has yet to be demonstrated, kindergarten or school readiness testing has been required in 16 states, with more than half the districts in 7 other states also required testing (Lewit & Baker, 1995). Furthermore, there is no consensus as to what constitutes readiness and how to measure it (National Association for the Education of Young Children [NAEYC], 1990). May et al. (1994) review legal challenges to the use of readiness tests on the basis that young children may be denied access to a free and appropriate education. The vast cultural and linguistic diversity of California's young children present a significant challenge to the development of a fair and effective screening instrument.

## KINDERGARTEN/FIRST GRADE RETENTION

Shepard and Smith (1986) concluded that there was little evidence to support the efficacy of grade retention in terms of children's achievement and that early retention may have negative effects on children's academic motivation. Subsequent researchers have reported similar conclusions. Mantzicopoulos, Morrison, Hinshaw, and Carte (1989) noted that the "determinants of retention transcend low academic achievement alone. Many other factors such as general cognitive ability, SES, behavior, gender, and minority status appear to influence nonpromotion" (p. 109). In their own research, they found that retained students were more likely to be younger, male, lower in SES with lower preacademic skills and increased problems in the areas of visual-motor integration, perceptual organization, and behavior. They concluded that, given the multiplicity of the retained group's deficits (many of which overlap with those found in children with learning disabilities), it was unlikely that reexposure to the same curriculum would be enough to facilitate remediation. Reviewing data on retention practices and correlates, Meisels (1992) also pointed out that SES, race, and gender differences in retention rates exist. He concluded that the evidence on the prevalence and consequences of retention "suggest it should be banished from the arsenal of educational treatments" (p. 163).

## STRATEGIES TO SUPPORT CHILDREN'S TRANSITION TO KINDERGARTEN

The NAEYC has published numerous articles on kindergarten preparedness issues, and interested readers are encouraged to examine the recommendations put forth in *Young Children* (Bredekamp & Shepard, 1989; Charlesworth, 1989; Freeman, 1990; NAEYC, 1990; Peck, McCaig, & Sapp, 1988; Willer & Bredekamp, 1990). Additionally, a special issue of the NAEYC *Early Childhood Research Quarterly* (June, 1992) was devoted to research on kindergarten. In the NAEYC Position Statement on School Readiness (1990), it is declared that to promote universal school readiness, three conditions must be met. First, the inequities in early life experience must be addressed, so that all children have access to the opportunities that promote school success. Second, individual differences among children must be recognized and supported. Finally, reasonable and appropriate expectations of children's capabilities upon school entry must be established. In accordance with these prerequisites, we endorse as strategies to smooth children's transition to and preparedness for kindergarten the goals of providing quality preschool experiences and improved communication among parents, preschool teachers, and kindergarten teachers.

## QUALITY PRESCHOOL EXPERIENCE

Attendance in preschool has been demonstrated to have beneficial effects for children in low-income families (see Reynolds, 1989; Reynolds & Temple, 1998; Schweinhart, Weikart, & Larner, 1986) and children in demographically diverse populations (Cryan, et al., 1992; Gullo & Burton, 1992; Sheehan et al., 1991). Sheehan et al., studying 32 Ohio public school districts, found that children who attended preschool prior to kindergarten experienced greater success in the early elementary years, performing approximately 10 percentile points better on achievement tests than those without preschool experience. Studying the same population of children, Cryan et al. also found preschool attendance predicted more positive teacher ratings of behavior. In analyses of school districts characterized by low SES circumstances, the beneficial effects of prior preschool attendance were even more evident.

Unfortunately, too many of America's children fail to receive early childhood education experiences. For example, Head Start, the federal program that provides a preschool experience and other services to poor children, still reaches only 29 percent of all eligible 3- and 4-year-olds (Zigler, 1998). Zigler advocates that the United States make available free public education that begins at the age of 3. The possibility of providing preschool for 3- and 4-year-olds is currently under review in California (Gittelsohn, 1997).

## IMPROVED COMMUNICATION TO FACILITATE SCHOOL PREPAREDNESS AND CHILDREN'S TRANSITION TO KINDERGARTEN

Greater attention needs to be given to the ways in which families support children's preparedness for and transition to kindergarten (NAEYC, 1990). Strong, clear, and frequent communication between parents and schools (i.e., kindergarten teachers), initiated far in advance of children's entry into kindergarten, is a relatively inexpensive way to support families. By educating parents about the skills that will help their children succeed in school and about the learning goals for children as they move through kindergarten, schools can help families support and prepare their children. What should children know as they enter kindergarten, and what should they learn in kindergarten? Knudsen-Lindauer and Harris (1989) investigated the views that kindergarten teachers and parents had on appropriate kindergarten curricula. Data were tabulated from the returned questionnaires of 139 kindergarten teachers and 436 two-parent intact families of kindergarten children in two school districts in the western United States. Teachers and parents rated 10 developmental domains as to their impressions on what children should know when entering kindergarten and the skills the children should learn while in kindergarten. Teachers and parents rated listening, feeling confident, and following directions as the three most important skills children should possess before entering kindergarten. More concrete skills, such as reading and writing, were ranked as the least important skills, a consensus held by both teachers and parents alike. As to kindergarten curricula, listening and confidence were rated as the two most important developmental skills to be emphasized in the classroom. Parents rated intellectual skills as the third most important, but teachers selected social skills. An agreement between parents and teachers was displayed in relation to the least important skills to be included in kindergarten curricula: art appreciation and self-help.

A similar study, conducted by Johnson, Gallagher, Cook, and Wong (1995), assessed the perceptions held by kindergarten teachers about the particular skills kindergartners should possess and demonstrated the variability in expectations among kindergarten teachers. One hundred seventy-six kindergarten teachers participated from three school districts (one large suburban, one urban, and one rural) in the southeastern United States. The teachers rated 149 skills encompassing five developmental domains (gross motor, fine motor, general knowledge and school, language, and social). The top ten skills selected by kindergarten teachers as critical skills were toilets independently; follows simple rules; engages in associative play; can say own birthday, telephone number, complete address, and name of primary caregiver; feeds self with fork; uses 5-6 word sentences; separates easily from primary caregiver; names colors; cuts on a straight line, circle; reads, prints, and spells own first name. Johnson et al. (1995) concluded that the skills teachers identified as important for entry into kindergarten were less academically based than commonly thought and that essential skills could be attained and transition into kindergarten eased through prior experience in preschool. Preschool teachers can also be a valuable source of information to educate parents about expected skills children should possess as they enter kindergarten.

Hains, Fowler, Schwartz, Kottwitz, and Rosenkoetter (1989) interviewed both preschool ($n = 21$) and kindergarten ($n = 28$) teachers to compare their respective expectations on the necessary kindergarten entry skills children should possess. Skills were grouped into categories such as academic, communication, instruction-following, social interaction, self-care etc. Results of this study showed that preschool teachers had higher expectations compared to kindergarten teachers regarding kindergarten entry skills, but both groups had similar expectations related to what skills were necessary for kindergarten exit. School readiness expectations vary greatly not only from state to state, but also between preschool and kindergarten teachers in the same schools. Thus, communication is essential for the facilitation of the transition into kindergarten.

Lewit and Baker (1995) evaluated the results of three large surveys of parents and/or kindergarten teachers. Results showed that teachers were more likely to rate good health as essential or very important compared to other characteristics. Both parents and teachers agree that verbal communication in the child's primary language, enthusiasm, and curiosity are among the most important skills children should have when entering kindergarten. Lewit and Baker also found that parents, not teachers, were more likely to believe that academic skills, such as knowing the alphabet or counting, were important (see also Knudsen-Lindauer & Harris, 1989).

These data suggest that some misconceptions exist between parents and preschool teachers about the skills that children should possess as they prepare to enter kindergarten. Clear communication among preschool teachers, parents, and kindergarten teachers about what children will encounter in the kindergarten classroom that is easily accessible and understandable to parents will help families support children's preparedness for kindergarten.

## CONCLUSIONS

Studies published since Shepard and Smith's synthesis of research on kindergarten policies extend and support their conclusions. Regarding comparisons of younger versus older children in kindergarten or first grade, findings continue to be mixed regarding whether measurable differences exist and how long they persist. Most social disadvantages associated with being the youngest dissipate in the early elementary school years; the results are not consistent regarding cognitive disadvantages, with some researchers finding them to persist into the upper elementary school grades. The practical significance of these statistically significant group differences should be considered. Short of admitting students to kindergarten at multiple times during the year, these differences will most likely continue to occur. Equally important to consider is the absolute social and academic progress children make, rather than their comparative progress, or progress relative to classmates.

The escalation of the kindergarten curriculum in terms of academic content has been noted (Cosden et al., 1993; Lewit & Baker, 1995). Specifically, while kindergarten in the past was viewed as a place where children learned to play together and socialize, it is now viewed by many as a time to provide children with "preacademic" skills in preparation for formal academic work. These changes may relate to continuing trends to raise the age at which children have access to free education. Since Shepard and Smith's (1986) synthesis, the most common entrance cut-off date has continued to increase, moving from October 1 to September 1 over the past dozen years.

Shepard and Smith cautioned against voluntarily delaying kindergarten for age-eligible children. Recent studies suggest their concerns were warranted, although additional long-term longitudinal studies would be more convincing. The effects of delaying entry vary, depending on what comparison group is used. Children whose kindergarten entry was delayed generally outperform children who entered when first eligible, when comparisons are made by grade. This is the advantage that accrues to being the oldest in the grade for those whose entry was delayed. However, when comparisons are made within age, the study by Morrison et al. demonstrates that the youngest first graders made as much relative progress as the oldest first graders and more progress than the children whose entry was delayed (old kindergartners). The cross-sectional study by Byrd et al. suggests that being old-for-grade, even without being retained, was associated with extreme behavior problem scores. Hence, the effects of delaying kindergarten entry may appear positive in the short-term but, in the long run, prove to be detrimental for some children.

No new evidence to alter the conclusions of Smith and Shepard with respect to readiness testing or grade retention has appeared. Since Smith and Shepard's review, the use of readiness tests has been successfully challenged in the legal system. Furthermore, the linguistic/cultural diversity of children nationwide and in California in particular presents a challenge to test-developers to create an unbiased and valid measure. No evidence to support the practice of grade repetition alone in improving children's achievement has appeared; in fact, children repeating early grades have been found to differ on numerous variables besides achievement from students not repeating grades. It is likely that more intensive interventions than reexposure to curricula or maturation will be necessary for remediation.

Crnic and Lamberty (1994) suggest that the only fair and ethical criterion for school readiness is a legal chronological age. Although recognizing that the trajectory of children's maturation and development rates vary widely, we concur with their assessment. Furthermore, to enhance children's school readiness and enhance their transition to kindergarten, we encourage kindergarten teachers to communicate clearly and frequently with parents about the teaching and learning goals for the kindergarten experience in their local schools, as far in advance of the children's entrance into kindergarten as possible. On a national level, research demonstrating the importance and the benefits of preschool experience for all children continues to accumulate. Zigler's (1998) call to provide free public education at age 3 warrants careful consideration.

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# Literacy Workshops: A Process That Empowers Children to Read and Write in Kindergarten

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The purpose of this article is to share a process called literacy workshops that includes reading, writing, publishing, and author's chair. The process was successfully implemented in a kindergarten classroom and evolved in response to the Reading Program Advisory recommendations for improving literacy instruction. The process includes explicit teacher directed skill instruction, child directed learning, and activities and strategies used in literature-based integrated language arts instruction. The questions that guided the implementation were: How can I provide more explicit direct instruction in phonemic awareness, concepts about print, and phonics? Can I deliver this skill-based explicit direct instruction and still incorporate the best practices for kindergarten? The related research, theories, and methods are reviewed. The curriculum activities are described and samples are shared. The writing development of the children is clearly illustrated.

California is in the middle of a literacy crisis. Reading achievement is at an all time low. In response, the State Superintendent of Public Instruction, California State Board of Education, and the California Commission on Teacher Credentialing (1996) made recommendations to improve reading instruction. The Reading Program Advisory mandated "a balanced and comprehensive approach to early reading instruction that includes both teacher directed explicit skill instruction and the activities and strategies most often associated with literature-based integrated language arts instruction" (p.3). In response to this mandate, I began to rethink my literacy program using research and the Reading Program Advisory recommendations as my guide.

At this time, I was teaching a kindergarten class of 33 students, 18 of whom were English language learners, speaking 6 different languages. Their literacy skills spanned a wide range of abilities. With this diversity it was critical that my literacy program address the individual needs of each child. The changes, therefore, would need to be consistent with established best practices for kindergarten (teaching that is guided by what we know about how children learn and develop).

There are several sources that have clearly defined best practices for early childhood education. Bredecamp & Copple (1997) state specific guidelines for teaching and curriculum that enhance learning. Since good teaching in the early years has been attributed to success in literacy (Adams, 1990; Clay, 1993a), it is important to review these points.

- Young children are active learners. They build their knowledge and un-

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derstanding of the world by interacting with materials, people, and ideas (Piaget & Inhelder, 1969; Vygotsky, 1978). They need many opportunities to practice, use, and refine the new skills they are acquiring (Cambourne, 1988). The classroom should reflect this by providing a print-rich environment where children have opportunities to actively explore concrete materials and sustain engagement with peers and adults (Bredecamp & Copple, 1997; Cambourne, 1988).

- The curriculum should include opportunities for child initiated instruction (Bredecamp and Copple, 1997). When children are allowed to initiate their own learning tasks and to practice that learning in a supportive environment, it results in what Caine & Caine (1991) describe as "natural knowledge." Natural knowledge is the result of learning that has meaning and purpose to the student. The result is a deeper understanding of the new information.
- The instruction should also include teacher directed lessons. Direct instruction facilitates learning (Adams, 1990; Vygotsky, 1978). Bredecamp & Copple (1997) support direct instruction when they state that "strategic teaching (direct instruction) can be effective in enhancing learning of young children" (p.13). They explain further, however, that "direct instruction may be totally ineffective; it fails when it is not attuned to the cognitive capacities and knowledge of the child at that point in development" (p.13). In other words, if the teacher is aware of the individual child's ability, skills, and prior experiences, she or he will be better prepared to provide appropriate strategies and support that promote learning and development.
- The role of the teacher is a facilitator of learning rather than a dispenser of information. Gallagher (1997) defines the teacher as "a researcher who makes careful observations, records those observations, and studies the results to gauge the strengths of each child (p.59)." According to Shefelbine (1995) teachers ensure success in early literacy by using such information to determine what kinds of strategies and support each student needs to reach fluency. This responsive teaching provides the opportunity for the teacher to scaffold instruction. Scaffolding is what Berk & Winsler (1995) describe as providing just the right combination of challenge, reinforcement, and support necessary to incorporate new learning. Vygosky (1978) described this kind of instruction as teaching in the child's zone of proximal development, a level that is just a step above what the child can currently do. Commenting on scaffolding, Dupree & Iverson (1994) state:

> This term implies that what children can do with help, they can ultimately do alone. To facilitate this, each child works in partnership with a more capable peer or adult who scaffolds the task by engaging in appropriate instructional interactions. These interactions can be modified in accordance with the child's increasing competence and control. (p.25)

- The responsive teacher who is able to scaffold instruction holds the key to effective explicit direct instruction. In this role, the teacher is able to provide direct instruction that connects the new learning with prior knowledge and current abilities to make a bridge to a higher skill level.
- Assessment should include observational assessment, examination of work samples, and documentation of strengths and development (Bredecamp & Copple, 1997). The authors note that this information should be used "to plan and adapt curriculum to meet individual children's developmental or learning needs, identify children who may have a learning or developmental problem, communicate with parents, and evaluate the program's effectiveness" (p.133).

In addition to these specific guidelines for teaching and curriculum that enhance learning, it is important to identify skills that will improve the literacy achievement of kindergarten children. Research (Adams, 1990; Clay, 1975; Stanovich, 1980) points to three skills that empower the literacy learning of young students. They are:

- Phonemic awareness - the ability to hear and differentiate between sounds, words, and syllables in speech.
- Concepts about print - locating the front and back of a book; identifying the title and punctuation; tracking left to right; knowing where to begin; knowing where to go at the end of each line (return sweep); discriminating between words and letters, top and bottom, words and space; reading words and reading pictures; recognizing letter/sound relationships; forming one-to-one correspondence; knowing how punctuation sounds when read.
- Phonics - understanding that each letter (or grapheme) of the alphabet stands for one or more sounds (phonemes).

The importance of these skills cannot be underestimated. Stanovich (1980) identified phonemic awareness as the most important predictor of reading success. Clay (1993b) emphasized the interrelationship of concepts about print, phonemic awareness, and phonics, stating:

> Without a feel for the conventions of print [concepts about print], the child cannot bring what he knows about letters and words to bear on the writing task, and without some skill at hearing the sounds within words [phonemic awareness] he has no chance of learning letter sound relationships [phonics]. (p.13)

With this information in mind, then, the central questions that guided my implementation of changes became:

- How can I provide more explicit direct instruction in phonemic awareness, concepts about print, and phonics?
- Can I deliver this skill-based explicit direct instruction and still incorporate the best practices for kindergarten.

During the reflective period, a writing program that included publishing (Wood-Walters, 1996) caught my attention. The writing program had several components: conferencing, publishing, and independent writing. One component stood out. It was the two to three minute mini writing lesson called *conferencing*. During this conferencing session the teacher meets with children individually, guiding the writing of a story. Since this program was being used successfully in a colleague's classroom, I was able to see, first hand, the conferencing process. As I observed the interaction between the teacher and each child, it was clear to me that this component would provide many opportunities to give explicit direct instruction on an individual level in phonemic awareness, concepts about print, and phonics. This seemed to be the program I was looking for. As I read more, I found that, as Routman and Butler (1995) point out, "daily writing using invented [phonetic] spelling [going from a word in oral language to representing the sounds with letters] is one of the best ways for young children to develop phonemic awareness and sound-letter relationships [phonics]" (p.4). Further, I found that reading and writing are parallel processes, each of which reinforces the development of the other (Adams, 1990; Clay, 1993b; Gallagher, 1997; Hall, 1987; Strickland, 1990). Since I have always been intrigued with Maria Montessori's (1967) declaration that children write before they read and the research was reinforcing the importance of writing and its influence on the development of literacy skills, I decided that the writing portion of my literacy curriculum would be a good place to start implementing change.

During this search of the literature, I found that I was putting together the parts of what could be called literacy workshops, that is, a modified writer's workshop that included a planned sequence of literacy learning experiences through which groups of children proceed during a scheduled block of time in the classroom. An overview of my literacy workshops, which includes a description of the components, follows next, with a fuller elaboration of the workshop process and how to implement it in the classroom presented later.

## OVERVIEW OF LITERACY WORKSHOPS

The literacy workshop is a 45 minute block of time that starts after the opening circle at the beginning of the school day. Conducting literacy workshops directly after the opening activities sets the stage for skills to be reinforced throughout the day. It is important to note that literacy workshops is only part of the literacy learning that is threaded throughout the kindergarten day. As noted by Holdaway (1979), literacy learning should not be limited to a specific time slot, but should be included in all aspects of the curriculum.

Two teachers work with the children during literacy workshops, so this was the time that my partner teacher worked with me in my classroom. The skills that are reinforced and taught during the workshops include: phonemic awareness, concepts about print, and phonics. Instruction is skill-based, holistic, teacher directed, child directed, whole group, small group, and individualized. The children are actively involved in all aspects of the workshops. As a result, the children construct their understanding of literacy from their perspective and experience.

Assessment during the workshops includes observational notes and work samples. The teacher writes notes regarding the observations of literacy strategies and skills learned and used by the children throughout the workshops and the school day. Since the children write daily, there is an abundance of work samples to document the progress that children are making. With this information, the teacher is able to individualize instruction and challenge the children at their levels.

The components of the workshops include: conferencing, publishing, shared reading, language experience, independent writing, several literacy related transition activities, and author's chair. A five day rotation moves the children through all the activities. By the fifth day all the groups have rotated through the activities described below.

*Conferencing with the teacher*

Conferencing occurs when the teacher meets individually with a child, guiding the writing of the story in the child's journal. Each child has one journal used exclusively for literacy workshops. All the writing during literacy workshops is done in this journal.

Conferencing could be considered the draft and editing stage of the writing process. As stated by Williams (1995), when conferencing "the teacher draws out whatever the child knows and models what is unknown, reinforcing and guiding approximations along the way" (p.38). This is a mini lesson of about three to five minutes. During this lesson, the child writes all the letters, sounds, and punctuation known, and the teacher writes all these components not known. Dupree and Iverson (1994) describe the process further:

> The main ideas underlining this [conferencing] approach to writing are that it is a unique and personal interaction between you [the teacher] and the child at crucial points of understanding and comprehension that assist the learning of the complex spelling, reading, and writing patterns of our language. (p.85)

During the crucial points of understanding and comprehension, the teacher uses explicit direct instruction to teach one or two new skills. Several references (Dupree & Iverson, 1994; Graves, 1983; Samway, 1992; and Wells & Chang-Wells, 1992) emphasize the importance of focusing on one or two skills to teach, stating that teaching more may not be as effective. Graves (1983) comments:

> Make it a discipline to choose one thing to teach, realizing that retention from conferences are high. The tendency when first working with conferences is to overteach, since the teacher feels it may be a week before she meets with the child again. Overteaching means the child leaves the conference more confused than when he or she entered. (p.64)

Each day one group of six to seven children conference with the teacher. As the teacher works with one child, the other members of the group, who have yet to conference with the teacher, are either finishing the illustration of their story, or reading a book from the book basket on their table.

At the end of the school day, the teacher transfers the draft of the child's story from the journal to a blank book. The book is now ready for the child to draw the illustrations tomorrow.

### *Publishing*

Publishing is an opportunity for the students to share and celebrate the writing of their books. Each day one group of six to seven children publish their stories that were written the previous day. The child receives his or her story, now in book form and ready for the illustrations. The book includes the title, dedication page, text, and on the last page is written *The End!*

Wood-Walters (1996) cited that the published copy must adhere to the highest standard of correctness. The teacher writes the text in the book to model quality work. Although this can be done on a computer, I found that handwriting the books was quicker and a better representation of quality "written" work.

After illustrating the story, the child reads it to a friend or an adult. If the child chooses to read the book to the class, he or she signs up on the author's chair sign up sheet. I review the story with each child who has signed up for author's chair. This is done before the story is read to the class. Each child has a book folder in which to keep the published books at school. The books are available to read during our DEAR (drop everything and read) time. DEAR time happens on a daily basis.

### *Shared Reading*

Shared reading is a group cooperative activity between the teacher and the children. The experience is similar to the bedtime story situation in the following ways, as noted by Butler and Turnbill (1984):

- the story is read within a warm accepting environment;
- a child often chooses the book;
- the adult reads the story to the children;
- the children and the adult interact with the printed page;
- the children participate in the reading of the story;
- the child's efforts to participate in the reading of the story are applauded and reinforced;
- the favorite stories are read over and over again.

The emphasis is on reading for the joy and pleasure of reading; however, a literacy benchmark, such as tracking or return sweep, can easily be incorporated as the story is read. As the story is read over and over, the children become familiar with the text. As their knowledge of the story becomes stronger, the leadership of the reading transfers to them. Mooney (1990) claims that "in the shared reading of any book children should feel they will be supported until they become so familiar with the story and how it works that they will be able to read it successfully for themselves" (p.30).

Shared reading was not an original component of the writing program I first observed. I added this component for several reasons, one of which was to increase the number of stories read to the children on a daily basis. Within the reading of the story is the opportunity to teach and reinforce concepts about print.

Shared reading provides a stimulus for writing topics and also provides many opportunities to model the role of the author (the person who writes the words, title, and dedication), illustrator (the person who draws the pictures), and the publisher (the person who takes the author and illustrator's work and puts it in book form).

### *Language experience*

Language experience is a writing method that models the idea that thoughts and experiences that are talked about can be written down. It relates how oral language is transformed to print. It provides a record of the child's words that can be read and reread. As Williams (1995) reported: "This simple activity binds spoken and written language together in a child's mind and can significantly aid vocabulary development" (p.2). During this process the child draws a picture and dictates his or her own words to the teacher. The teacher writes the words. Following is an example of the teacher-child interaction.

T: Tell me about your picture.
C: This is my school. I love my school.
*(At this point repeat the child's words, then write each word as it is said again.)*
T: This is my school. I love my school.
*(After the words are written both teacher and student read the words together.)*
T: "Let's read your words together. I will point to each word as we read it."
C and T: "This is my school. I love my school."

The language experience approach is a strong foundation activity for working with English language learners and, according to Cummins (1982), is most successful when implemented with the support of someone who speaks the child's primary language. I started the year by focusing on families and family members. This focus provided a common prior experience knowledge base for everyone. As a result, many of the pictures drawn and the stories told were of family members. During language experience, the bilingual associates or parent helped translate the dictation from the child's home language to English for me. Once I understood the content the children were drawing, I was able to interpret in English.

### *Independent Writing*

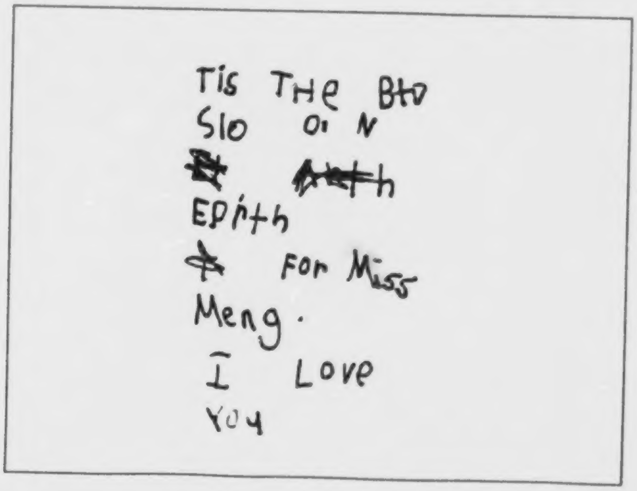
Children learn to write by writing. As noted in the Ministry of Education report (1996) "[kindergarten] children will be at all stages of development, but they should be encouraged to write for themselves from the first day of school and read what they have written, even when their approximations are not easily recognizable" (p.125).

As the children write independently in their journals, they are encouraged to draw their picture first, as the picture provides the concrete representation of their words. Since the children are at varying stages of development, the teacher will see a continuum of writing from scribbling, drawing, and making marks on the paper to children using their phonemic awareness and phonics skills to write their words. As stated previously, it is important for the teacher working with the children to know exactly what each child can do. With this information the teacher is better prepared to scaffold instruction about phonemic awareness, concepts about print, and phonics skills as the children write.

*Literacy related transition activities*

Several activities that reinforce literacy skills are available during literacy workshops for the children to choose after they finish their work. The children work independently with these activities until it is time for author's chair. I introduced two new activities a week. The following list includes some of the activities I used:

- *Letter detective* - During this activity, the child uses the letter detective sheet, clipboard, and pencil. The room is "searched" for a particular letter. Each time the letter is found, the child writes the letter or a tally on the letter detective sheet.
- *Word detective* - This is the same as the activity above, but during this activity the child "searches" for a certain word. It is usually a high frequency word that we are learning.
- *Pattern detective* - This is similar to letter and word detective, but during this activity the child looks for patterns around the room, both math patterns and word patterns such as cat, mat, rat. The child tallies the number of patterns found. As the year progresses, listen and look for patterns in word family lists and stories.
- *Reading the room* - The child reads the room after choosing one of the reading sticks (pointers). He or she walks around the classroom using the pointer to track the words of nursery rhymes, charts, labels, poems, stories, and songs that are posted in the classroom. The reading sticks range from a traditional school reading pointer to a more exciting Merlin the Magician pointer that lights up and sparkles when it is moved.
- *Writing a letter* - Envelopes, paper, pencils, pens, a regulation size mailbox with a red flag (Kmart sells them for about $7), and the names of all the children in the class provide all the materials necessary to start this activity. Model how to write a note to a friend and the process for putting it in the mailbox. Don't forget to flip the flag up to signal that there is mail. The note illustrated in Figure 1 was received in the class mailbox.



Tis THe Bto
Slo O N
Eprth
For Miss
Meng.
I Love
You

*Figure 1. A kindergarten child wrote this letter independently. "This is the best school on earth. For Mrs. Meng I love you"*

- *Publishing a book* - Have blank books available for the children to write in. Notice that, after the publishing process has been in place, children will slowly start to follow the publishing format used during literacy workshops.
- *Initial sound sorting* - The children sort objects by initial sound. All the objects starting with the same sound are grouped together. I start with two sounds. Two extensions are sorting by beginning blend and sorting by word family.

### *Author's Chair*

Author's chair was not included in the original publishing program I saw. However, when I learned that reading and writing are parallel processes, each of which reinforces the development of the other (Adams, 1990; Clay, 1993b; Gallagher, 1997; Hall, 1987; Montessori, 1967; Strickland, 1990), I added author's chair to the workshops. This gives the children an opportunity to read what they have written and published in a very public way. The child reads the whole book: the title, dedication, story, and the end as he or she sits in the author's chair in front of the class. Using a microphone enhances motivation. The children love it! As stated by Samway (1992), author's chair is "an opportunity for the whole class to celebrate in the accomplishments of class members" (p.7).

## LITERACY WORKSHOPS

Literacy workshops begin as one group of children at a time are dismissed from opening circle to either conferencing and publishing, or shared reading and independent writing. First, the conferencing group is dismissed to the conferencing table. When the children get to the table they start drawing pictures for their stories in their journals. The publishing group is dismissed next. Children are given their stories they wrote the day before, in book form. They are dismissed, one at a time, to the publishing table. As each child is dismissed, read the title of the book and share with the class what each child wrote. This procedure reinforces the topic for the child and models the process for the other children.

The remaining children stay together with one teacher for shared reading. The other teacher moves to the conferencing table to begin working with individual children. Someone walking into the classroom would see:

- 6 to 7 children working in their journals at one table. One teacher is working with one child at that table.
- 6 to 7 children are drawing the illustrations in their books that they are publishing. An instructional assistant or parent might be supervising this group. The children may be working independently.
- 13 to 20 children are sitting on the rug listening to a story that is being read by the other teacher.

The following description of one group's five day experience relates how the process actually works. Within that group we will follow one child. At the end I will describe the preparation required for the teacher to be ready for the next school day.

Day 1 - Conferencing with the teacher

Materials needed: journals, pencils, crayons, alphabet cards
Grouping: one group of 6 to 7 children
Staffing: one teacher

The first thing the children do when they arrive at the conferencing table is turn to the first blank page in their journal. They write the date at the top, referring as needed to the date written on the board. Each child draws the illustrations for his or her story first. The picture gives the child a concrete representation of his or her thoughts and helps access the words to the story they will write. The picture also provides a visual cue for the teacher to prompt the child about the story, e.g. "Tell me about this part (as the teacher points to a particular area) of your story." This is particularly helpful with English language learners. The teacher rotates through the group working individually with each child guiding the writing of the words to the stories. Figure 2 illustrates what the story of one child looked like at the end of the conference.

The teacher begins the conference.

T: Becca, tell me how your story starts.

C: My dad is going to the store.

T: Can you write the word "my"?

C: No.

T: What do you hear in "my"?

C: "y"

T: You're right, there is a y at the end. Before the y is the letter m. The letter m makes the sound "mm". Where will we begin on the page?

C: *(Points to the top left of the writing lines.)*

T: Yes! We always start there. Should we use a capital "M" or a lower case "m"?

C: A capital "M".

T: You're right and why do we use a capital? *(Writes the "M")*

C: It is the first word.

T: Yes, it is the first word of the sentence.

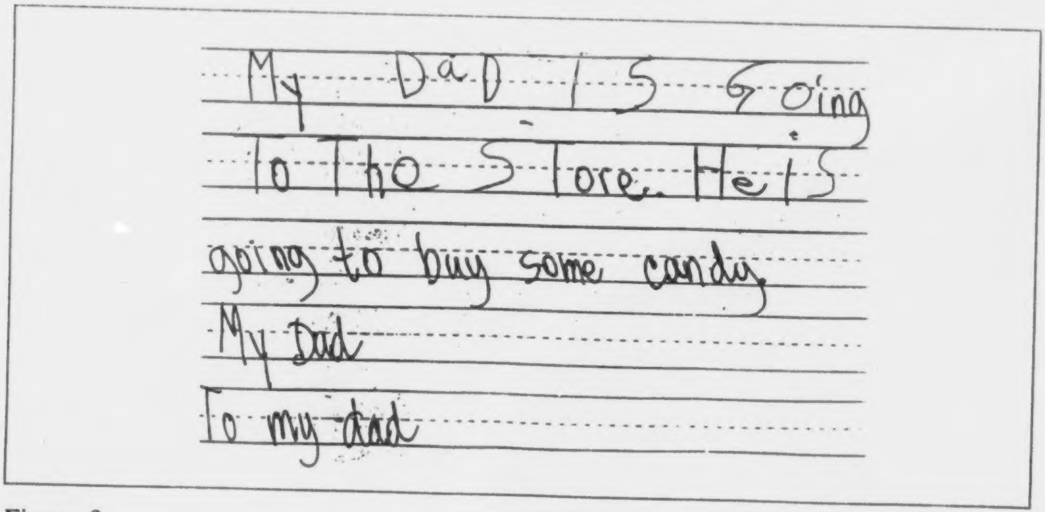
C: *(Becca writes the letter "y" after the "m")*

T: Let's read the word together as I point to it.

T and C: My

T: The next word is dad. What do you hear in "dad"?

C: "d" *(Becca starts to write the letter*



My DaD IS Going
To The STore. He IS
going to buy some candy.
My Dad
To my dad

*Figure 2.*

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*"d" next to the "y" in "my".)*

T: Wait, let's look at where the letter "d" should go. There are spaces between words when we write. Can you make a finger space?

C: Yes. *(As she places her left pointer finger next to the "y" in my, she writes the letter "d".)*

Notice that the d is in upper case. The skills that the teacher was focusing on during this conference were spacing between words and phonics. To avoid overteaching, that is, teaching too many skills at one time, the teacher moves on to finish writing "dad".

T: Can you hear anything else in "dad"?

C: *(Becca repeats the word out loud to herself, stretching the word)* /D/a/d/ *(she pauses to think and says)* "a." *(She writes the "a" next to the "d".)*

Notice that the a is "floating" above the mid line; remembering that only two points should be taught during one conference, the teacher moves on.

T: What do you hear at the end of "dad"?

C: "D." *(As she writes the D next to the "a".)*

T: Let's read your words together.

*(The teacher points to each word)*

T and C: My dad.

T: The next word is "is". What do we need to remember before we write the word is?

C: Finger space! (As she places her finger next to dad)

T: Do you know how to write is?

C: Yes.

T: How do you spell it?

C: "I" "s." *(She writes it next to her finger.)*

T: Let's read the words together.

T and C: My dad is

T: The next word is "going". What do you hear in "going"?

C: "g" I don't know a "g".

T: Point to "g". *(They look at the alphabet card.)*

C: Here it is! *(Points to "Gg")*

T: What do you do before you start a new word?

C: *Puts finger after "is" to make a space)*

T: That's right. We put spaces between words.

C: *(writes a capital "G")*

T: What else do you hear in "going"?

C: An "o" *(writes "o" next to the "G")*

T: The other sound in "going" is "ing" and it looks like this. *(Writes "ing" after "go")* Let's read the words together.

T and C: My dad is going

T: The next word is "to". Where do we write "to"?

C: *(points to the far left of the next line)*

T: Yes!

C: *(writes "to")* I can write the next word. *(makes a finger space and writes "the")*

T: Let's read the words.

T and C: My dad is going to the store.

T: What do you hear in "store"?

C: "s" and "t". *(makes a finger space and writes "s" and "t")*

T: The other letters in "store" are "ore". *(Writes "ore")* Let's read the sentence.

T and C: My dad is going to the store.

T: What do we put at the end of the sentence?

C: A dot. *(Writes a period after store)*

The teacher extends the story by asking, "What is your dad going to do at the store?" She answers, "He is going to buy some candy." Becca is able to write "he" and "is". The mini-lesson was long enough at this point, the teacher wrote the rest of the story. The whole story is read back. After the text is finished the teacher works with Becca to decide the title and dedication.

T: What is your story mostly about?
C: My dad.
T: Great! The title will be My Dad. *(The teacher writes "My Dad")* Who would you like to dedicate this book to?
C: To my dad.
T: *(The teacher writes "To my dad")*

After the teacher writes the dedication, Becca puts the journal in the journal basket and chooses a transition activity. She works on the transition activity until it is time for author's chair. At the end of the school day, the teacher copies Becca's story from her journal into a blank book. The book will be given to her the next day to illustrate.

It is important to keep in mind some important points that will help the conferencing process move along smoothly. The teacher does not have to wait until the illustration is finished to start conferencing. Giving the children a couple of minutes to start their illustrations is usually enough time for them to have a good idea of what their story is about. Also it is possible, after you are confident with the process and know the abilities of the children, to work with two children at a time. While one child is writing a word, you can conference with another child who is close by. Also, do not try to have the child write too much of the story at first. Keep in mind that the mini lesson should be no more than 3-5 minutes.

Day 2 - Publishing

Materials needed: felt pens (later in the year teach the children about different media -- watercolor, chalk, sketching, etc.), the written story in book form from the previous day.
Grouping: one group of 6 to 7 children
Staffing: 1 instructional assistant or 1 parent (Note: This activity can easily be done independently by the children.)

As Becca is dismissed to illustrate her book, the teacher says: "Yesterday Becca wrote a book titled My Dad. She wrote about her dad going to the store." The child takes the book to the publishing table and illustrates the story. Figure 3 illustrates what the four pages of Becca's book looked like, on this day.

When Becca is finished, she reads her book to a friend or adult. She signs her name on the author's chair sign up sheet, if she chooses, and puts her book on the sign-up clip board. If she chooses not to participate in author's chair, she puts the book in her book folder, which is kept in her cubby, and then chooses a transition activity.

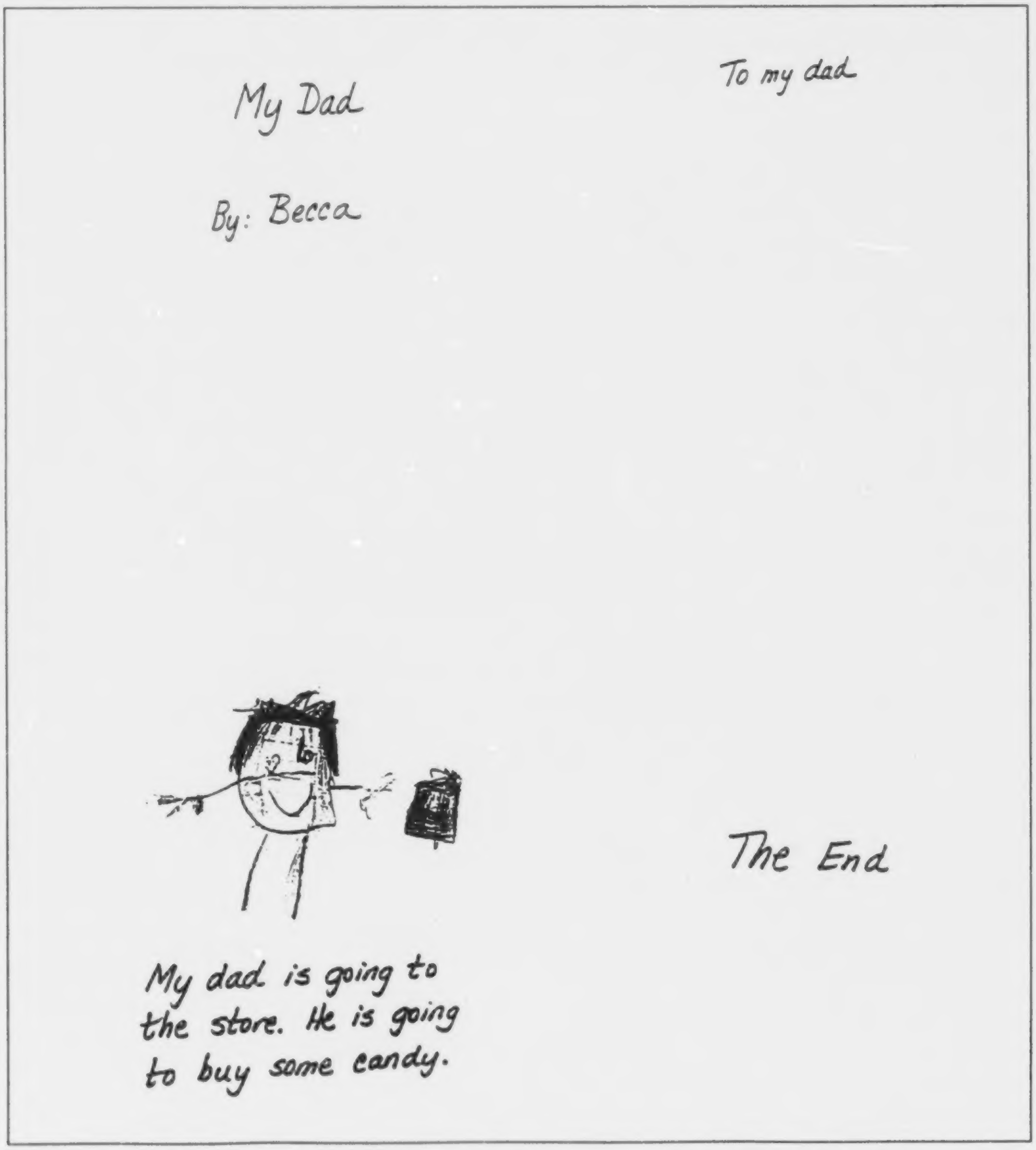
Day 3, 4, & 5 - Shared Reading to Independent Writing

Materials needed: a book to be read with the children, a literacy benchmark focus (e.g. rhyming, return sweep, word-to-word match, etc.), journals, pencils, crayons
Grouping: One larger group of 13 to 20 children (This group comprises three of the five small groups in the class.)
Staffing: one teacher

The shared reading activity is led by one teacher. The teacher reads the story, chosen by the teacher or a child, incorporating the literacy benchmark focus. Often, the teacher will read the story a second time, at the request of the children. When the story is finished, a short discussion ensues. Before dismissing the children to write in their journals, they are given prompts to clarify further the story and spark writing topics: What was your favorite part of the story?

Which character was your favorite? What would you do it...? Have you ever...? The children are dismissed to write in their journals. They always have the choice to write about the story that was just read or to write about anything else that is important to them that day. Some children may still dictate their story. The teacher rotates to all the children, scaffolding and encouraging independent writing. Figure 4 illustrates Becca's independent writing.

This same process is repeated on the next two days for Becca's group. By the third day the children in this group have completed the rotation and will start the rotation over with conferencing the next school day. The following diagram gives a visual representation of the rotation process. Becca is in the A group. If



My Dad

By: Becca

To my dad

My dad is going to the store. He is going to buy some candy.

The End

*Figure 3. The book is four pages; cover, title page, text, and The End.*

you follow her group, you will find that on day one she conferenced with the teacher; on day two she published her story; on days three, four, and five she participated in shared reading and writing.

Literacy workshops do not require the traditional kindergarten preparation: cutting out construction paper, making sure you have enough pieces for everyone, sorting and organizing the pieces to make sure you have a set for each child. At the end of each day, there is prep work to complete in order to get the materials ready for the next day. The following list will describe the preparation required to make sure the materials are ready for the next day:

1. *Review all journals, make notes as needed, plan for the next day.*

Look through all the journals and review the writing of each child. Make notes, as necessary, for the next day. For example, as you review the children's journals, you might notice a student beginning to leave spaces between words. The child was able to use spacing appropriately during conferencing, but when writing independently, spacing was used inconsistently. This is when you make a note for the next day to remind yourself to review and model this concept with the child.

2. *Make the books to be illustrated, published, and read the next day.*

Transfer the stories from the conferencing group journals to the blank books. Handwriting the stories in black felt pen is quick and provides a correct clear copy of the text for the child to read and reread.

3. *Transfer notes to report cards / portfolios.*

4. *Provide new journals as needed.*

## IMPLEMENTING LITERACY WORKSHOPS IN THE CLASSROOM

There are several processes that will facilitate the successful implementation of literacy workshops. Rhodes and Shanklin (1993), defining a reading or writing workshop, state: "Students not only work independently during workshop periods, they also interact with each other and with you [the teacher]..." (p.23). Since my plan for the workshops included considerable independent work, I recognized that I needed to prepare the children for such work by training them

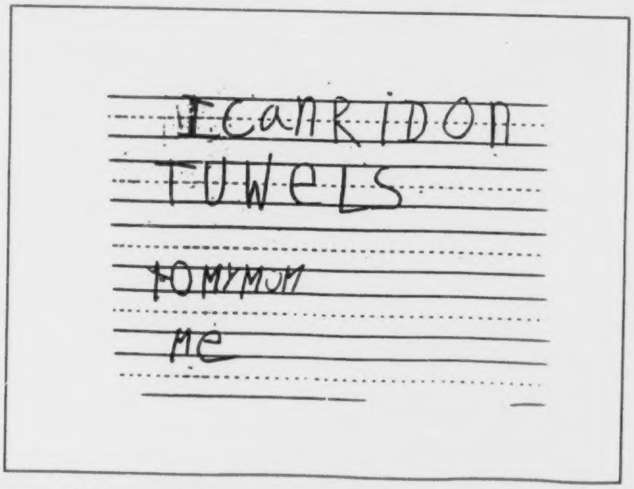


*Figure 4. Becca wrote this rough draft independently. "I can ride on two wheels"*

| | Conferencing | Publishing | Shared reading/Writing |
|---|---|---|---|
| Day 1 | **A** | z | * , #, o |
| Day 2 | o | **A** | z, *, # |
| Day 3 | # | o | **A** , z, * |
| Day 4 | * | # | o, **A**, z |
| Day 5 | z | * | #, o, **A** |

to work on their own. This training is one of the most important aspects of management during literacy workshops (the other is the overview of the whole classroom while still working with individual children). At the beginning of the year, *before* literacy workshops start, make activities available for the children to choose when they finish their work. This provides a smooth transition to the next activity by allowing some children to be independently engaged in meaningful tasks while the other children finish their work. Start with one or two activities. Some traditional materials that are recommended for the beginning of the year are: puzzles, pattern blocks, geo boards, sorting/matching activities, science books. As the year progresses, add more challenging activities. Keep in mind that, at the beginning of the year, the focus is on training the class to work without constant assistance. When training children to work independently, model and demonstrate:

1. Which materials are available.
2. Where the materials are located.
3. How to use the materials.
4. How to return the materials.
5. What the signal to stop is and how to respond to the signal. (I use a bell or turn the light off.)
6. What the classroom looks like when everything is cleaned up.

Demonstrate all of the above daily for the first two weeks of school. Then, depending on the class, demonstrate this use of the materials the first day of the week as needed. By the time literacy workshops begin, the children are familiar with the process and can work independently with the activities when they are through with their writing.

Another important part of literacy workshops is organizing the scheduling, staffing, grouping, and materials. Scheduling or fitting the workshops into the day is not as difficult as it may seem. After reviewing my schedule, eliminating one whole group cut-and-paste activity and combining snack and recess, I found at least 45 minutes a day. The program is five consecutive days. I do not think of the program as running from Monday to Friday but, rather, as a five day rotation. When there are holidays, short weeks, assemblies, etc. that interrupt the schedule, I just pick up where we left off on the next school day, whatever that day is.

With a class of 33 children you need two teachers. One teacher is needed for the conferencing group and one teacher for the shared reading/ independent writing group. This was the time my partner teacher helped in my classroom. One teacher works with the conferencing group, and one teacher works with the shared reading/ independent writing group. Both teachers oversee the transition activities.

With 33 students, I divided the class into 5 groups as evenly as possible by ability, gender, and language. Mixed-ability grouping promotes peer coaching and modeling. Flexible grouping is also an important consideration. As children become able to write and publish independently, reorganize the groups so there is opportunity to meet more often with the children who need more assistance.

The following list includes a description of all the materials required for literacy workshops:

1. *Journals* - Each child has one journal that is used exclusively for literacy workshops. It is made of lined newsprint with the lines at the bottom and a space at the top for illustrations. The lines provide a space to model how to write the letters correctly. The covers are made of colored construction paper. The five colors correspond to the five groups. Color coding each group makes it easy to sort the journals at the end of the day.

2. *Alphabet Cards* - The alphabet cards provide a reference to coach and teach children the letters/sounds of the alphabet. There is one laminated card for each child. The cards include the alphabet with upper and lower case letters. A corresponding picture of an object that matches the initial sound appears with each letter.

Sight words that the children have learned are written on the back of the card. A permanent ink pen is used to write the words. Fingernail polish remover will erase the words at the end of the year. Start all over next year!

3. *Blank Books* - Blank books are used to publish the children's stories. The book is made from white bond paper and has four pages when completed (cover, dedication page, text, the end!). Use two sheets folded in half and stapled in the middle. This is a very easy "send home" activity for parents to assemble. Have at least 100 on hand to start. The children will consume 20 - 40 per week depending on how often they are publishing and the number of students you have in your class.

4. *Author's Chair Sign Up Sheet* - This form is used to sign up for author's chair. Keep it on a clip board on the publishing table. Children sign their names and leave their books with the clipboard until it is time for author's chair.

5. *Book Folder* - This folder holds the published books and is made from file folders stapled on the sides. Each child has one folder. The children decorate them and keep them in their cubby when they were not being used.

6. *Journal basket* - This basket holds the children's journals after they are used for the day.

## ASSESSMENT - EVALUATION

Teachers need accurate and detailed information that clearly describe and record the literacy skills of each child in the class. In the role of researcher, the teacher uses observational notes, work samples, and individual assessments to plan and adapt instruction that promotes development and literacy learning. The observations are taken on post-it notes and transferred to a clipboard. On the clipboard are index cards with one child's name on each card. The cards are taped to the clipboard, one card overlapping the other, with enough space left at the bottom of the card so that each child's first name is showing. The names are in alphabetical order. Observations are recorded in this way throughout the day.

The notes from the clipboard are transferred to the child's portfolio.

As mentioned earlier, the teacher reviews each child's journal daily. The work samples in Figures 5, 6, and 7 are from three children in my class. These samples were taken over time from their literacy workshop writing. They provide a clear picture of the developing skills of these children.

In addition to journals and observations notes, individual assessments of concepts about print, letter identification, and sound identification are conducted individually with each child. Figure 8 shows the recording sheet for assessing a child's understanding of concepts about print. The recording sheet for letter and sound recognition appears in Figure 9 and the sheet for capital letters is shown in Figure 10.

The assessments are conducted four times a year: at the beginning of the year (within the first two weeks of school) and every trimester. The information is combined with daily observation notes and the children's work samples and used to plan instruction and ensure that each child is progressing.

As can be seen from the work samples I shared, this program was quite effective. The program certainly opened my eyes even more to the infinite possibilities we have as teachers of young children.

## CONCLUSION

This was an amazing experience for me. As the year progressed, the children's love of reading and writing developed in a way I had never before experienced. They were writing more often, and as a result, they were becoming more competent writers each week. They were consistently and confidently reading their published books during author's chair. It was clear that this process had touched the heart of learning for them. Not only did this process improve the literacy skills of my students, it also improved my understanding of my students and my ability to respond with strategies that met their individual and developmental needs. It empowered me to be responsive.

As I reflect on the experience, I often ask myself why this process made such a difference. As I wrote this article and reviewed more of the research I found my answers. One answer lies in the best practices that guided the literacy instruction and my role as the responsive teacher and researcher. Specifically, the children were intrinsically motivated to read and write because they had a stake in the process. They chose the topic. They chose the words. During conferencing, they had control of the process as I gave explicit instruction based on the individual child's strengths and abilities. Herein lies the next answer. Explicit direct instruction to develop phonemic awareness, concepts about print, and phonics delivered in a responsive way empowered the children to develop more sophisticated reading and writing skills. Yes, I directed their learning of very academic skills, but they chose the road we followed together. Throughout literacy workshops they had opportunities to use, in meaningful ways, the phonemic awareness, concepts about print, and phonics skills that they were acquiring. This purposeful practice tapped their innermost desires to acquire new skills. Their time was spent representing their thoughts on paper. They were involved in the engaging process of figuring out how the thoughts in their heads turned

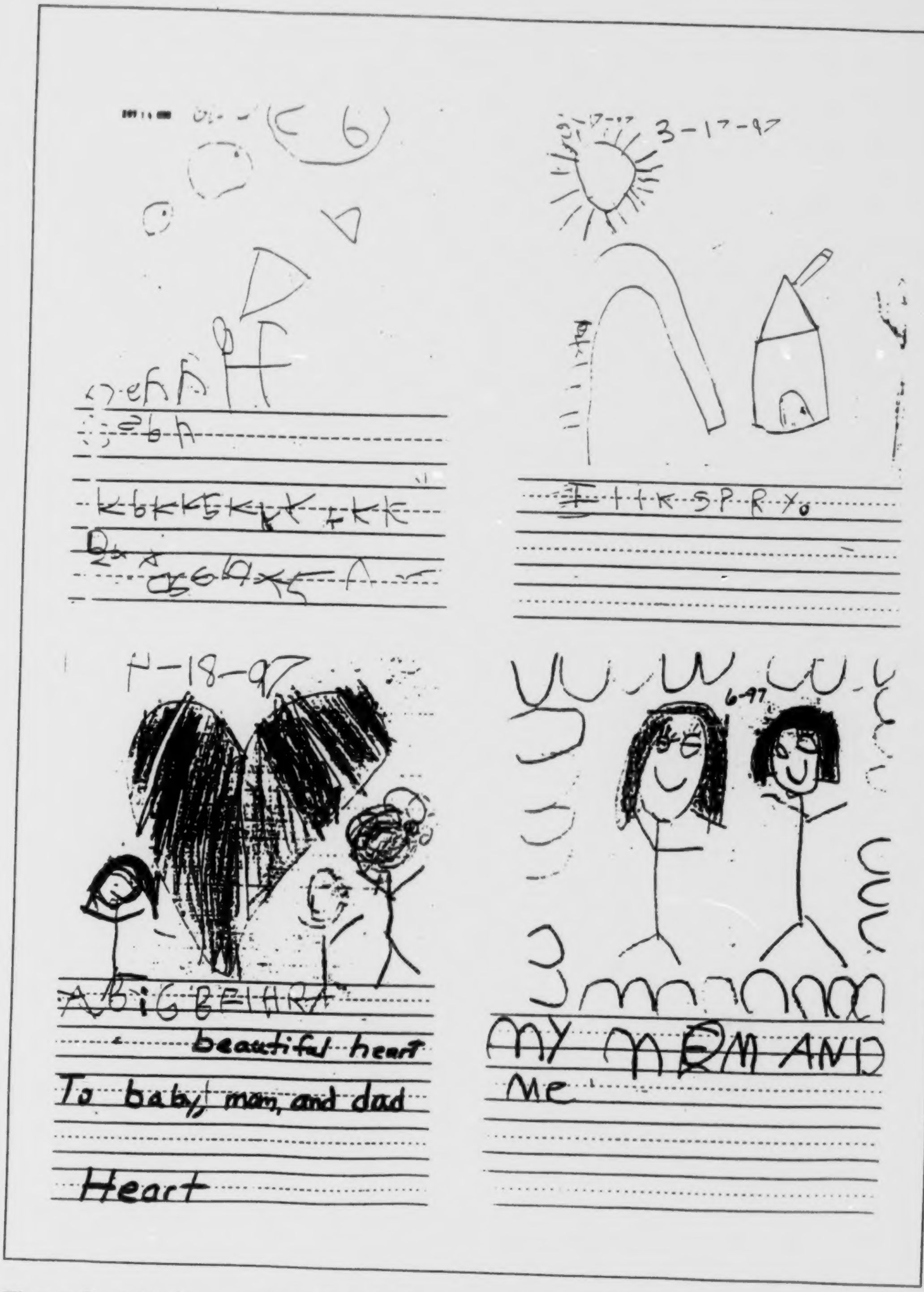

3-17-97
I l i k S P R Y
4-18-97
A BIG BEIHRA
beautiful heart
To baby, mom, and dad
Heart
6-97
MY MOM AND
ME

*Figure 5. A kindergarten child started writing strings of letters in November, began using phonetic spelling in March. "I like spring" and continued using phonetic spelling during a conference in April. In June, the child wrote independently "my mom and me."*

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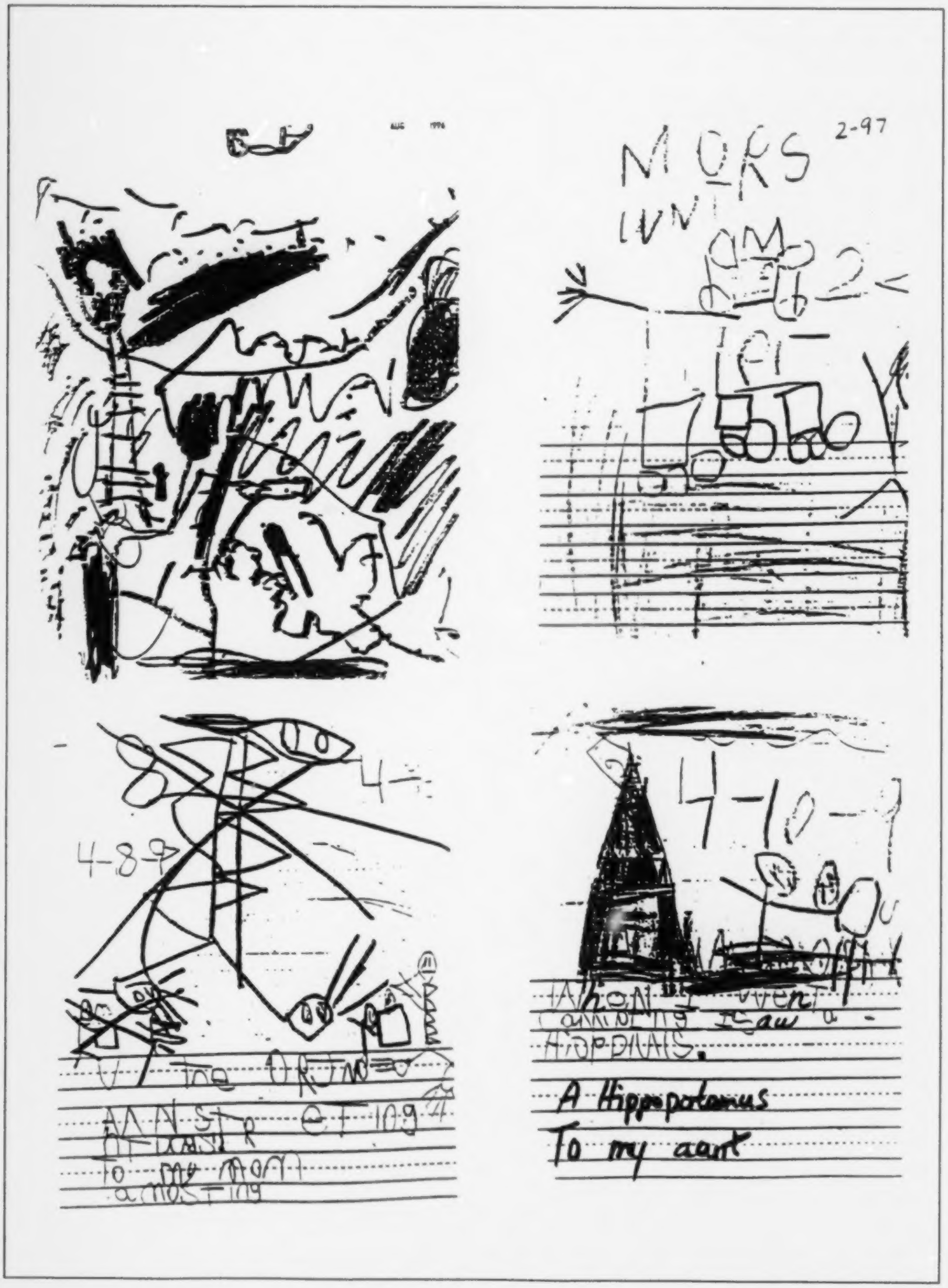
MORS 2-97
WNT
4-8-97
The ORNJ
MANSTR etIng
HT DOGS
To my mom
A MOSTIng
4-10-97
A hoNt went
SWIMMING I saw a
HIPPDNAS.
A Hippopotamus
To my aant

*Figure 6. A kindergarten child wrote letter like marks in August and in February began to use phonetic spelling writing "Morris went." In April this rough draft of a story was written independently. "The orange monster is eating hot dogs." The dedication was "to my mom" and the story was titled "A Monster Eating." Later that month, during a conference with the teacher, a story was written about a hippopotamus.*

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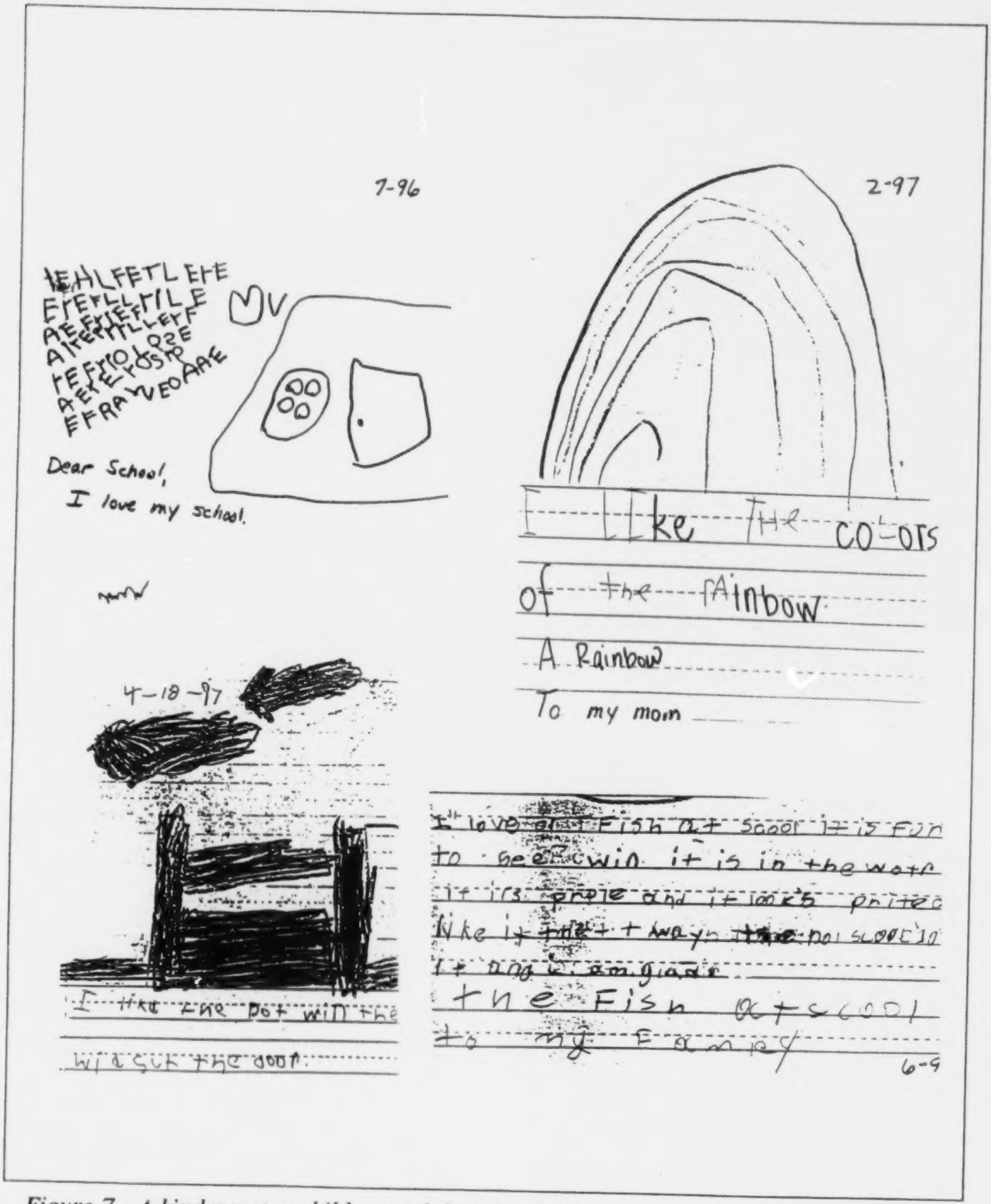

7-96
Dear School,
I love my school.
2-97
I Like The co-ors
of the rAinbow
A Rainbow
To my mom
4-18-97
I like the pot win the
wi d Sut the door
I love our Fish at Scoor it is Fun
to see wen it is in the wotr
it is prpie and it look's prited
like it that way the hol scoor lo
it and I am glad
the Fish at scool
to my Famly
6-9

*Figure 7. A kindergarten child started the year making strings of letters and dictating words. By February, this child already had control of the words I and the. In April the phonetic spelling read "I like the part when the wind shut the door." At the end of the year this rough draft of the story was written independently. "I love our fish at school. It is fun to see when it is in the water. It is purple and it looks pretty and I like it that way. The whole school loves it and I am glad." The title read "The Fish at School" The dedication was "To my family."*

## STORY BOOK READING CENTER ASSESSMENT

CHILD'S NAME ____________________ DATE________

OBSERVER____________________

While students are in the emergent reading stage of development, teachers will want to see that they are developing accurate concepts of print which might include the following:

1.____ Locate the front of the book
"Show me the front of the book."

2.____ Predicts book content by cover picture
"What do you think this book is about?"

3.____ Concept that print, not picture carries the meaning
"Show me where to start reading."

4.____ Reads from top to bottom
"Show me where to start."

5.____ Reads from left to right
"Which way do I go after that?"

6.____ Return sweep to the left
"Where do I go after that?"

7.____ One to one correspondence between spoken words and words in print "Point to it while I read it."

8.____ Concept of first and last
"Show me the first part of the story. Show me the last part."

9.____ Makes predictions in reading based on context
"What do you think will happen next?"

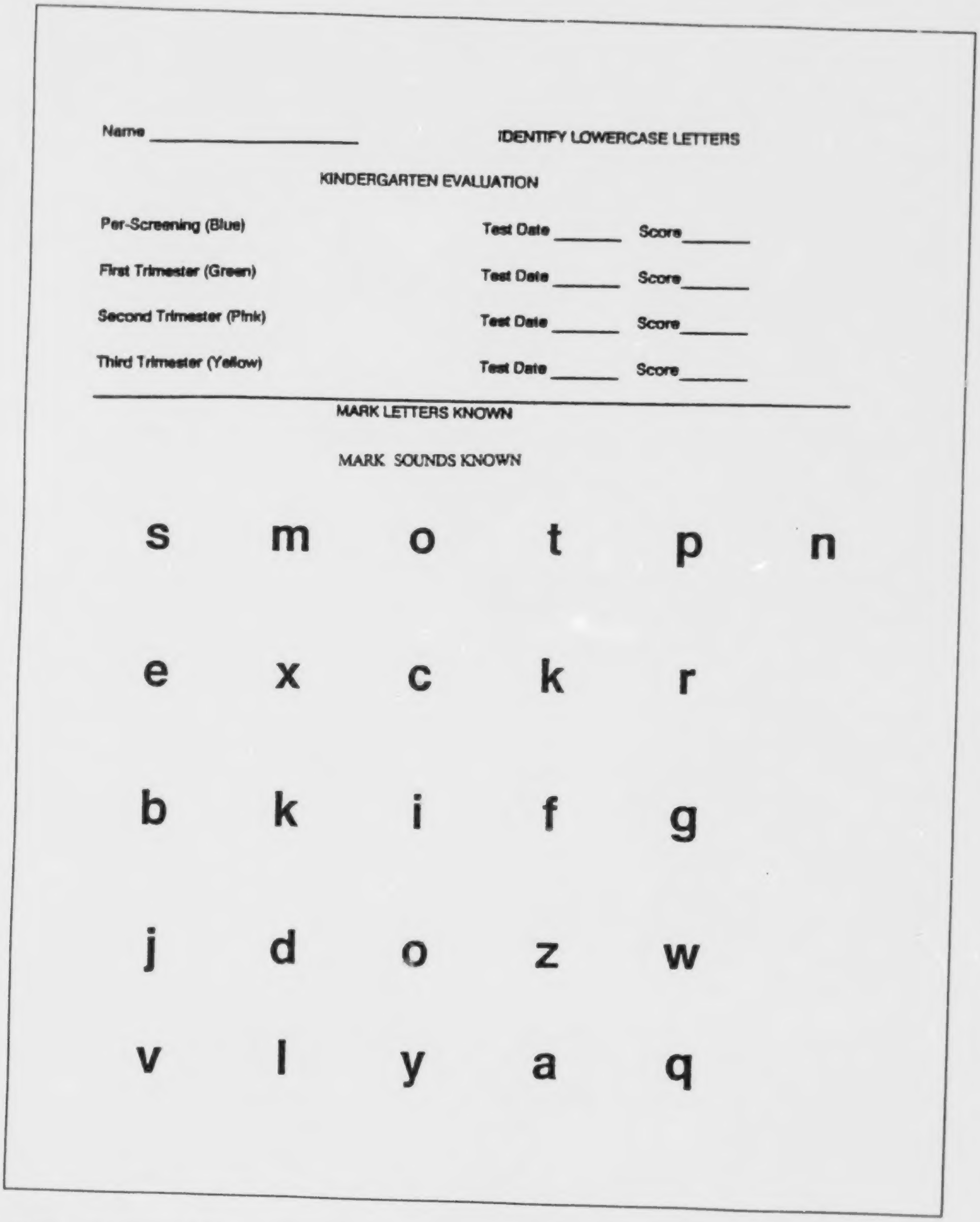
10.____ Recognizes letters in capital and lowercase forms
"Show me a capital (uppercase)letter. Show me a small letter."

11.____ Visual discrimination of letters in words
"Are these words the same? - no and on."

12.____ Recognizes the difference between letters and words
"Show me a letter. Show me a word."

13.____ Can locate letters at the beginning and end of a word
"Show me the first letter of a word. Show me the last letter of a word."

*Figure 8. Concepts about print recording sheet*



Name ______________________ IDENTIFY LOWERCASE LETTERS

KINDERGARTEN EVALUATION

Per-Screening (Blue) Test Date ______ Score______

First Trimester (Green) Test Date ______ Score______

Second Trimester (Pink) Test Date ______ Score______

Third Trimester (Yellow) Test Date ______ Score______

MARK LETTERS KNOWN

MARK SOUNDS KNOWN

s m o t p n

e x c k r

b k i f g

j d o z w

v l y a q

*Figure 9. Letter identification and sound identification recording sheet*

Name ______________________

KINDERGARTEN EVALUATION

Per-Screening (Blue) Test Date ______ Score ______

First Trimester (Green) Test Date ______ Score ______

Second Trimester (Pink) Test Date ______ Score ______

Third Trimester (Yellow) Test Date ______ Score ______

---

MARK LETTERS KNOWN

| | | | | | |
|---|---|---|---|---|---|
| S | M | O | T | P | N |
| E | X | C | K | R | |
| B | K | I | F | G | |
| J | D | O | Z | W | |
| V | L | Y | A | Q | |

*Figure 10. Capital letter identification recording sheet*

into letters, words, and sentences. They were writing books that were published and appreciated by peers and adults. They were writing letters to each other and to me that carried meaning and had a purpose. They were modeling for each other in a way that resulted in more risk taking and learning.

Can teachers provide a literacy program that includes explicit skill instruction and incorporates the best practices for kindergarten? Yes, it is possible; however, it takes a skilled and motivated teacher to teach this way. As stated by Pappas (1993), this role requires "reexamination of underlying assumptions about knowledge, power and language in teaching, as well as collaboration [being a partner in learning].... Teachers must reevaluate the everyday instructional patterns of interactions they have with their students" (p.297). Teaching this way is hard work, but it is worth the effort. All children are extremely capable learners if we provide the right balance of direction and responsiveness.

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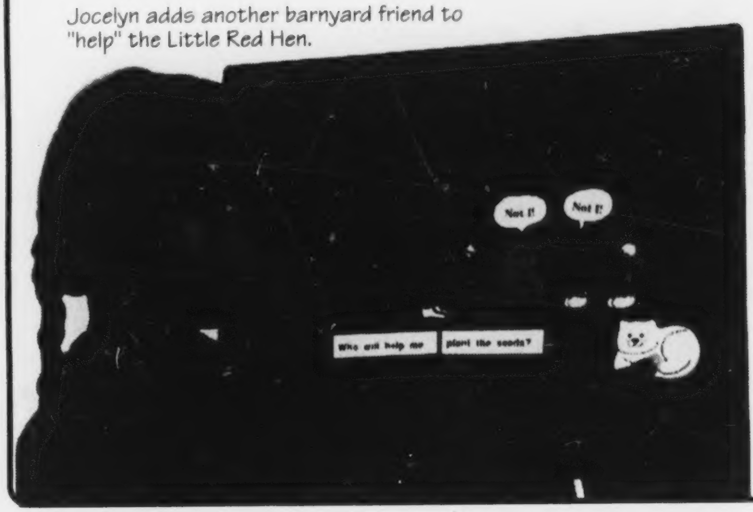
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Not I!
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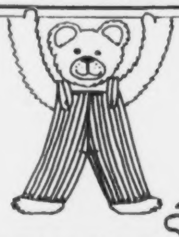

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*Kindergarten Education: Theory, Research, and Practice*
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# Symbolic Play; Piaget's Symbolic Function And The Foundation Of Reading (Part 5)

Jeanette McCarthy Gallagher

This is the fifth and final article on Piaget's symbolic function as the foundation of reading. Piaget's symbolic or pretend play is highlighted as unique in its emphasis upon cognition or the development of thought. By the use of imagery and dialogue, this type of play provides another foundation for reading. The child is engaged in symbol use in interactive constructions. Three obstacles for children's opportunities to engage in pretend play are explored: (1) reduction in recess; (2) academic pressure, and (3) increased television viewing.

> The children had turned a back-yard playhouse into a spaceship. They fought storms and talked to dinosaurs and defeated wizards. All without benefit of a video screen. Up on the deck, the adults drank their coffee. "What kind of software are we going to get the kids for the summer?" asked a man. "Make sure it's educational," said a woman. "There's a lot of good stuff out there now, and you don't want your girls to be left behind." (Kass, 1998)

John Kass, a columnists for the *Chicago Tribune,* found it difficult to maintain silence as his neighbors missed the richness of their children's play. In this technology-driven society, all adults, even educators, need to be reminded of the power and importance of play.

In this article we come to the last of the areas of Piaget's symbolic function, that of symbolic or pretend play. After an introduction to the meaning of symbolic play, the use of symbols in dramatic play will be discussed. Relationships between symbolic play and other areas of the symbolic function, especially language and imagery, will be linked to the foundation of reading. Finally, contemporary obstacles to the flourishing of symbolic play will be discussed.

## SYMBOLIC PLAY AS A COGNITIVE ACTIVITY

First, recall that the symbolic function providesthe child with the cognitive ability to represent the world apart from the presence of objects. Often symbolic play one object is substituted for another in a "pretend" situation. Sinclair's (1976) example clarifies this point: "The child who pushes a small shell along the edge of a

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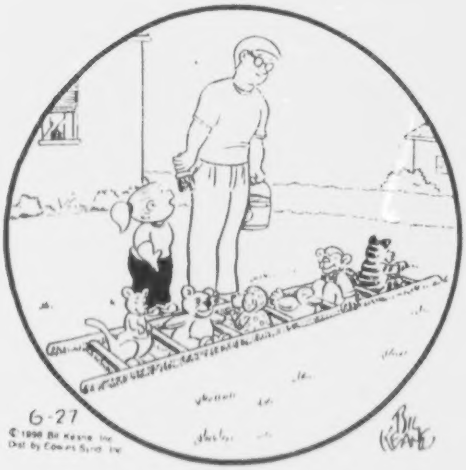
box saying 'meow' knows fully well that the shell is not a cat and the edge of the box is not a fence....A wealth of such observations throws light on the development of the symbolizing capacity, which has many different aspects that are at first inextricably linked in observable behavior." (P.192

In the cartoon below a child is representing a play situation as a real-life phenomenon, another demonstration of the symbolizing capacity. The cartoonist could have substituted playpen or driver's seat for "yard" again clarifies the meaning of a symbol as a representation of the world.


6-27
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"Look, Daddy! They each have their own yard."

*Family Circus reprinted by permission of King Features Syndicate*

### *The Uniqueness of Piaget's Approach to Symbolic Play*

It is this powerful use of symbols in the growth of cognition that is the central and unique focus of Piaget's writings on this area of play. It is the symbolic feature of this form of play that closely ties it to the foundation of reading. As has been emphasized in the previous articles of this series, the kindergarten child is placed in a sea of symbols. The child needs to substitute letters for sounds and sounds for letters, words for meanings and meanings for words, language for images and images for language, and images for drawings and drawings for images. When children participate in symbolic play, they make substitutions to represent the world. It is this practice of substituting that will be a key in the child's learning to read.

Piaget considered symbolic play as the apogee or highest type of play.

> Obliged to adapt himself constantly to a social world of elders...and to a physical world which he understands only slightly, the child does not succeed as we adults do in satisfying the affective and intellectual needs of his personality through these adaptations. It is indispensable to his affective [emotional] and intellectual equilibrium, therefore, that he have available to him an area of activity whose motivation is not adaptation to reality but, on the contrary, assimilation of reality to the self, without coercions or sanctions (Piaget & Inhelder, 1969; pp. 57-58).

The child involved in symbolic play, therefore, is free--a key element of true play.

In addition to the use of symbols in this type of play, another key feature is its improvisational nature, that is, not needing rehearsal. Sawyer's research (1997) is centered upon this feature:

> One of the most improvisational activities of 3- to 5-year-old children is social pretend play, also called fantasy play, sociodramatic play, or role play. Children's imagination has free reign during pretend play. They manipulate dinosaur figurines to create a drama of panic after an earthquake. They play out a story in which a duck and a dinosaur are best friends. They build spaceships with elaborate systems of weaponry and controls, and go on adventures to exotic planets. Conversations in these play episodes are more improvisational than the average adult conversation....Because pretend play dialogue occurs in a dramatized, fantasy world, it is less constrained by social and physical reality. (p. xviii)

Here children are creating drama and a related sequence of events.

The improvisational aspect of symbolic play is dramatically highlighted in a series of paintings by Francisco de Goya in the Museo Del Prado in Madrid, Spain. Here we can observe children playing soldier, "giant" (larger children carrying younger children on their shoulders) and leap frog. The improvisational or spontaneous feature of pretend play is especially important in kindergarten because through it children continually create a sequence of ideas and related actions that constitute a story, their own story. They build the sequence with language and related actions, moving from a beginning to the next point, to the next point, through to the end of the drama.

A third feature of symbolic play is that it is constructive, that is, the child actively represents the world through creative gestures, language, and facial expressions. Symbolic play is not merely imitation but, as Piaget (1974) stated, "is an exercise of action schemes {a construction} and therefore part of the cognitive component of conception" (p.338). Especially in symbolic play, the child assimilates objects according to the need of the moment. At one time a block may be a hat, at another time a pepper shaker, and at still another time a clock. The child is drawing from an assimilative base of symbols that represent what is needed in relation to the context of the fantasy play situation. (Recall that an assimilative base is a network of relationships; see Gallagher, 1997b.) For Piaget (1966) symbolic play involves a dominance of assimilation over accommodation so that the child "Transforms reality in its own manner without submitting that transformation to the criterion of objective fact" (p.111). The use of symbols becomes a constructive process in which the child does not have to conform to an adult's view of objectivity.

The child of kindergarten age has reached the height of interest in symbolic play. Such play, therefore, needs to be incorporated into the kindergarten curriculum because it is especially relative to the foundation of reading, as will be emphasized in subsequent sections.

### *Symbolic Play as Social Activity*

Each of the areas of the symbolic function (oral language, written and printed language, imagery, drawing, and pretend play) in relation to the foundation of reading has a social basis. In previous articles in this series (Gallagher, 1997 a and b; 1998), emphasis has been placed upon social settings wherein children participate in such activities as drama and drawing. Although symbolic play may be performed by one child or by several children, early childhood settings foster a social environment for this type of play.

Piaget has been criticized for ignoring the social factors of development. "It has even become popular to say that Piaget's child is a solitary scientist constructing knowledge apart from the social context" (DeVries, 1997). Light (1986, as cited in Smith, 1993) claims that Piaget portrays development as a long and essentially solitary struggle undertaken by the lone child. Attention in educational circles has turned to Vygotsky as the model for curriculum development due to this theorist's interest in the primacy of social and cultural processes (Smith, 1997).

If we attend, however, to Piaget's emphasis upon the role of symbolic play in cognitive development, it is obvious he believed that a strong social element is an essential aspect of such play. Piaget (1947/1950) stated: "The human being is placed from birth onwards in a social environment which operates in the same way as the physical environment" (p.156). In a collection of Piaget's (1995) sociological studies another strong statement may be found: "Human knowledge is essentially collective and social life constitutes an essential factor in the creation and growth of knowledge" (p.30). (See also a recent collection of Piaget's [1998] writings on education.)

### *Piagetian and Psycholanalytic Approaches to Symbolic Play*

As we have noted, Piaget (1932, 1951; Piaget & Inhelder, 1969) was the first theorist to emphasize that symbolic play affects the development of cognition. This emphasis was a dramatic change in the understanding of children's play.

It is beyond the scope of this paper to elaborate on the various theories and approaches to the study of play (for an extended summary, see Herron & Sutton-Smith, 1971). It is important, however, to touch upon the psychoanalytic approach, which is sometimes used in teacher training and which preceded Piaget's view. Therapists and educational workers with a psychoanalytical orientation use the term "dramatic" play for symbolic play. The underlying notion in their writings centered upon the child in situations where he or she would work out difficulties so as to cope in the environment with confidence. Erikson (1940) wrote:

> To play it out is the most natural autotherapeutic measure childhood affords. Whatever other role play may have in the child's development (and I do not think that these roles are adequately known) the child also uses it to make up for defeats, sufferings, and frustrations. (p.561)

Another psychoanalytic writer,

Susan Isaacs (1933) explained the value of dramatic play:

> When the child plays at being father and mummie and the family of babies...he is externalizing his inner drama...When he can...express these phantasies in active play, his inner tension is eased and a new equilibrium of mental health and happiness is attained. (p.425)

In these examples, dramatic or pretend play becomes therapy in an emotional release. In sum, the value of such play for a psychoanalyst centers upon emotional development. By contrast, in Piaget's view the cognitive or intellectual component of such play is central in that a symbol system is expanding. The affective or emotional component is included in that the child is free to adapt reality to his or her own needs by assimilating objects according to the need of the moment. In other words, the Piagetian approach to symbolic play as a cognitive activity stresses the concept of mastery in a child's environment rather than an escape from an adult environment.

## SYMBOLIC PLAY AND LANGUAGE

> The children's talk flows past at a rapid rate. Given my self-imposed role of drama critic, I am bound to track down as many loose threads as possible. Yet these actors in covered hideouts may not be intruded upon too often. If called upon to deal with an emergency, I am then part of the plot, but I must resist most other on-the-spot inquiries or risk ending the drama (Paley, 1988, p.83)

In the second article in this series (Gallagher, 1997a), stress was placed upon the importance of a strong language base as the foundation of reading. Emphasis was placed upon the use of themes for the child's understanding of the interralationships between spoken vocabulary, pictures and drawings, printed words, reading and writing. Play within a theme such as a postoffice, grocery store or block-building area provides the basis for rich dialogue. It is in these language exchanges that the power of symbolic play for the development of cognition is most related to the foundation of reading. When children eat their pretend dinner or buy their pretend groceries, they construct the "plot" through verbal exchanges. These symbols of language and the symbols used in play are both constructions. During these constructions, children interact with what they already know and the language of other children. These constructive interactions are the heart of Piaget's basic premise that children develop their own understandings. Again, Piaget's view of pretend play as a source for cognitive development surpasses other views of play, especially the psychoanalytic position on play as emotional release.

Dialogue during pretend play, therefore, becomes a fertile field for the teacher-researcher relative to investigating individual children's potential for reading. In the above quotation, Paley captures the dilemma that teachers face when they wish to explore the quantity and quality of language exchanges during pretend play. How does a teacher "listen in" without disrupting the natural flow of the children's communication? What are the relevant aspects of dialogue that will assist the teacher in learning more about the children's language and cognitive development which form the foundation of reading?

The first question is the most difficult. Sawyer (1997), in the process of writing a research report on pretend play, taped the children's interchanges. Such a process may not be feasible for most teachers in early childhood settings. What seems to work, according to my observations, is for the teacher to "listen in" on play group sessions while working at another task. For example, a teacher could be searching for items in a closet and at the same time catch some of the children's interchanges.

The second question on probing the power of verbal exchanges leads the teacher to many clues linked to the cognitive basis of reading. Sawyer (1997) provides detailed analyses of children's dialogue while they are participating in pretend play. One classification of dialogue important to the kindergarten teacher is the distinction between explicit and implicit strategies used by children to successfully enter an ongoing play group. If children are to engage in verbal exchanges during pretend play, it is necessary for them to be admitted by other children.

Consider the following example (Sawyer, 1997, p. 100) of an explicit strategy:

> Muhammed and John have been playing in the Lego area since John arrived at 9:05. They continue building spaceships with Legos until cleanup time at 9:44. At 9:40, Mark enters play, and after this entry, the three play together until cleanup.
> Mark: Can I play with you?
> John: Yes, yes.

When Mark asks to be admitted to the play group, he is making an *explicit* statement that he wants to participate in what the other children are doing and wants to contribute to the dialogue.

Contrast this exchange with an implicit strategy (Sawyer, 1997, p. 101):

> Yung-Soo: OK, I'm here!
> Kathy: Oh, hello, Yung-Soo! You were calling us!

Note that Yung-Soo in this example assumes that she will be admitted to the pretend play session and that the other children want to play with her. She does not explicitly, that is, specifically ask to be admitted. Therefore, her statement "OK, I'm here!" is *implicit*. Sawyer (1997) gives evidence that as children advance in age they will use a mixture of explicit and implicit entries. Also, children who are already a part of an existing friendship group are more successful in being accepted whether or not they use an explicit or implicit approach. The teacher-researcher who is concerned about the development of dialogue, and consequent development of vocabulary, may wish to place children at times within friendship groups in theme areas. Such placement would be especially important for those children identified as weak in vocabulary or in sentence construction.

Another classification of dialogue studied by Sawyer (1997) is the distinction between within-frame and out-of-frame exchanges. For example, in the following dialogue it is clear that the girls are participating in a dinner theme:

> Kathy: I think dinner's almost ready!
> Rachel: Dinner's ready!
> Kathy: I cooked the dinner.
> Rachel: Dinner's ready.
> Kathy: Not it's not. Not yet! I have to put a bit of eggs (Sawyer, 1997, p. 147).

Just after this event two boys try to gain entry to the play session by growling like monsters. One of the girls rebukes them: "We're not playing monster game! We're playing dinner" (Sawyer, 1997, p.157). The dialogue of the girls is *within frame* because each exchange is consistent with the dinner theme, the "frame" of the play. As the dinner proceeds, each girl stays in character as the cook or guest. The boys' attempt to enter the play situation as monsters is out-of-frame, that is, not consistent with the theme or characters of the girls' dinner. As children advance in age, their symbolic play is more within frame (Sawyer, 1997). Such a finding is not surprising when the language and cognitive development of the child is considered.

These two dialogue classifications, implicit and explicit entries and within frame and out-of-frame exchanges, are key assessment tools for the kindergarten teacher. For example, the child who makes an implicit entry needs to know the "plot" of the play in order to be accepted by the other children. The child who makes an explicit entry will need to quickly uncover the trend of the story in order to contribute through meaningful action and dialogue. The early dialogue after children enter, either explicitly or implicitly, provides clues to the teacher as to story comprehension level of individual children. Careful attention needs to be paid to the child who does not seem to grasp the flow of the dialogue or story. Such a child may need opportunities to participate in preplanned dramas, which build self-confidence for pretend play sessions. In addition, if a child always asks to be accepted, that is, frequently uses an explicit entry, the teacher may note that this child may not be comfortable in pretend play situations. By placing this child with friends, opportunities for dialogue exchange will be expanded.

Careful analyses of within frame and out-of-frame exchanges may assist the teacher to determine vocabulary level and understanding of the sequence of events, both of which directly relate to the foundation of reading. In addition, as individual children make suggestions to extend, vary or completely change a play sequence, the teacher may determine how well such suggestions are accepted by the other children. In sum, the study of dialogue in pretend play becomes a valuable tool for the assessment of language, which forms the foundation of reading.

### Book-Related Symbolic Play

Rowe (1998) defines book related play as "dramatic play that reflects either explicitly the *meanings* signed in books' text or illustrations, or in the book-reading events in which children encounter books" (p.10). Books and the teacher's interventions become the catalyst for symbolic play by providing themes and encouraging dialogue.

By assigning key roles to children, the teacher is helping them engage in drama that includes characterization, construction of the story plot and related story problems, sequential arrangement of story events, and resolution of the story problems. Stories also may be extended, and story parts and endings may be changed. Recall the story of Alfie (Gallagher, 1998; Hughes, 1981), in which a preschooler gets locked in his house. Various neighbors try to come to the rescue. In Day Four of suggested activities, children were encouraged to make suggestions to extend the dramatization to include other neighbors. In so doing, the children were extending the story, including the characters and sequence of story events.

A related activity is centered upon those instances when children incorporate a traditional story into their own fantasy world. Paley (1988) records four-year-old Frederick's story and effectively expands on the child's symbolism:

> Once there was Super Mighty Mouse. Once there was Superman. Superguy too. Then Jack came. Before Jack is going to climb up the beanstalk all the superguys chopped down the beanstalk. Then Jack looks inside all the superguys and all the pirates. And no one is there.
>
> Teacher: That's an interesting idea. Jack looked inside and no one was there.
>
> Frederick: Because there was still standing the beanstalk. How could there be superguys? They're not even in Jack's story. Maybe he could visit.
>
> Teacher: Visit who?
>
> Frederick: The giant's wife. If she's lonely.
>
> Barney: He better not, Frederick. I'm pretty sure that giant used to be her little boy (p.x).

Note that the teacher either repeats an item from the dialogue or asks for clarification ("Visit who?"). Such interventions help the children focus and support their attempts at expanding on a theme.

### *Blocks and Symbolic Play*

Another activity that promotes symbolic play is block play. Piaget (1932) described one girl's symbolic use of "bricks" (i.e. blocks): "Using interlocking bricks and rods she build a big house, a stable and a woodshed, surrounded by a garden, with paths and avenues. Her dolls continually walked about and held conversations." (p.137) In this example the child is playing alone. Often block play, however, leads to interactions between a teacher and several children. Pickett (1998) conducted an observational study and found that children actually increased linguistic exchanges when a teacher was present to assist in the block building.

Reifel and Yeatman (1991) provide an example that may give clues to why the teacher's presence in this type of activity increased conversation:

> Anthony: I take some corn. Hey, look he's eating corn.
>
> Teacher: All right.
>
> Anthony: After I'm finished with this, I'll build a cornfield so I can feed 'em.
>
> Teacher: Good idea, Anthony. (Anthony hums and builds with blocks.) (pp. 160-161)

In this exchange the teacher is a supportive influence for the development of symbolic play. This is no doubt the reason why Pickett (1998) noted the increase in conversational exchanges as time progressed. Perhaps in some forms of symbolic play related to themes such as "house" or "grocery store" children prefer to stage their own private production without a teacher. Other times, the teacher may be the catalyst to engage those children who are too shy to instigate play on their own.

The link to reading is very clear when strengthening of dialogue is a key consideration. As children engage in dialogue through symbolic play, they are attending to the give and take of story telling and enriching their vocabularies. With the support of an alert teacher, even the hesitant child will expand exchanges.

*The Role of Puzzlement in Symbolic Play*

Another language area to be noted by kindergarten teachers is related to "puzzlement" or disturbance wherein children learn by noting contradictions in what they had previously believed (See Gallagher {1997a, p.7}, Article 2, Reading and Language). In order to engage in symbolic play in a group setting, it is necessary to set aside reality by puzzling over the possible and deciding "who does what" and "what to call this." Here the children construct and name a symbol and assign character roles.

Examples of puzzlement and negotiation that often occur in pretend play is caught by Sawyer (1997):

> Two boys have blocks, which are now "pepper shakers" which shake "poison pepper." When Jennifer's dinosaur becomes a little too threatening, they chant "Pepper, Pepper," and shake at the dinosaur. Jennifer doesn't want her dinosaur to die; she says "Pretend he just sneezes from the pepper, he doesn't die." The boys agree. (p.118)

Also note in this example that the children are reflecting on their own language as they negotiate. Pellegrini and Galda (1993) relate such reflections to the foundations of early reading:

> Symbolic play may be important in early reading to the extent that it helps children go meta [go beyond] on their surroundings. By going meta, children are using language to reflect on language. It may be that symbolic play...is a particularly good context...for children to engage in the conflict resolution process that results in using language to talk about language. Symbolic play gives rise to conflict because of its inherent ambiguity; things in fantasy are not, by definition, what they are in reality. (p.171)

As children engage in symbolic

play, then, they also engage in different language forms and create and act out their own stories and book stories. In so doing, they overcome puzzlement and participate in negotiation, decisions about characters, and assignment of symbols. The teacher becomes a researcher as she notes the language forms of symbolic play, the negotiations resulting in resolutions, and the reflections on language used by the children.

## SYMBOLIC PLAY AND IMAGERY

> I watched three boys and two girls playing with a big cardboard box. Within a half hour that box served as a prison, a train, a doghouse, and a people house. They assumed changing roles with little discussion; for example, "I know! It's a doghouse." And everyone became dogs that quickly. When they were through with the box, they broke it all down flat and lay down on it, "sleeping." (Koste, 1987, p.68)

Another area of the symbolic function that relates very closely to symbolic play is imagery. The cardboard box conjures up four images: a prison, a train, a doghouse, and a people house! The children draw from their assimilative base of images to enrich their play.

### *Imagery in Children's Literature*

Imagery, symbolic play and the foundation of reading are closely linked in children's literature. The child's assimilative base becomes enriched through figures of speech such as simile, metaphor, and the representation of sounds (onomatopoeia) -- all based on a symbol system with representations. In Jack and the Beanstalk, the Giant stalks in with a "thump, thump, thump" and shouts his orders with a "voice of thunder." Mary's little lamb has fleece as "white as snow." And what a challenge for kindergarten children to discuss the symbols in the rich metaphor when *Winnie-the-Pooh* (Milne, 1961) jumps out of bed: "The Sun was still in bed, but there was a lightness in the sky over the Hundred Acre Wood which seemed to show that it was waking up and would soon be kicking off the clothes" (p. 65). Children's literature is filled with delightful descriptions. In *Charlotte's Web* (White, 1952) Charlotte, the spider, spins the passing of the seasons for Wilbur: "Winter will pass, the days will lengthen, the ice will melt in the pasture pond. The song sparrow will return and sing, the frogs will awake, the warm wind will blow again. All these sights and sounds will be yours to enjoy"(p.391). The frequent references to the changing of seasons in this story symbolize the central theme of life and death. The theme of vanity may be dramatized by children after listening to descriptions in *The Emperors' New Clothes* (adapted from Hans Christian Anderson by Van Leeuwen, 1971): "So the royal chamberlains bent down and pretended to lift the emperor's train. With hands held high, they carefully carried the train that was not there (p. 37)."

Often children are building a symbol system around a single word. Consider, for example, the symbols that a child builds around the word "soft."

A child easily understands the meaning of "softly tiptoeing" in Kuskin's (1958) poem, "Tiptoe." What a different image the word evokes when the Queen begs Rumpelstiltskin not to take her baby. Rumpelstiltskin's "odd little heart softened." A discussion may follow on the meaning of a soft heart as compared to one that is hard and cold. When teachers pause to help children reflect on figures of speech and descriptions, they are preparing children for a deeper understanding of the world of symbols that they will encounter in a lifetime of reading.

### *Imagery, Symbolic Play and Themes*

In an earlier article (Gallagher, 1998), imagery was stressed as a construction, not an imitation. Symbolic play as a constructive activity draws constantly on the child's store of images. We return to the importance of themes to facilitate children's symbolic play.

In most kindergarten classrooms there is a play area that focuses on a theme such as a postoffice, a store or a dining room. The play area provides a stage for the improvisational sessions we call symbolic or pretend play. Some children would engage in symbolic play without a structured theme area. Others (perhaps those who passively watch too much television or play too many computer games) need the stimulation of familiar settings to coax them to participate in symbolic exchanges. In addition, it is wise for a teacher to assign children to the theme area on a rotating basis to encourage vocabulary development and to provide ideas for later drawing and writing activities.

## OBSTACLES TO THE DEVELOPMENT OF SYMBOLIC PLAY

> Today many children live a childhood of imprisonment...the world once offered thousands of free play delights. Children used to play, explore, and interact with the world at large, whether it was the sidewalks, streets, alleys, vacant lots, and parks of the inner city or the fields, forests, streams, and yards of suburbia and the rural countryside. The lives of today's children, however, are much more structured and supervised (White & Stoecklin, 1998, p. 25).

Many factors have contributed to the shrinking of children's environments which leads to a decrease in spontaneous play. Devereaux (1991) stressed the fear parents have for safety, the growing number of latchkey children, and structured after-school activities. To this list one may also add reduction in recess, academic "pushing" by overzealous teachers and parents, and increased television viewing.

### *Reduction in Recess Time*

Some school districts have reduced or completely eliminated recess for grade-school children even at the kindergarten level. Safety reasons are often given. In addition, recess has become increasingly viewed as "wasted time" that could be spent on classroom instruction.

Pellegrini (1995; Pellegrini & Davis, 1993; Pellegrini & Smith 1993; Pellegrini, Huberty & Jones, 1995) and Jambor (1990, 1994) have led the fight against the movement to eliminate recess. Pellegrini's research gave evidence that children need frequent breaks from structured activities in order to learn. In addition, kindergarten children were less attentive in the classroom when recess was delayed. "Seeing the value in this natural laboratory of peer interaction [the recess period], child psychologists and educators have considered the school playground as an important venue for children's social and cognitive development" (Pellegrini, Huberty & Davis, 1995, p. 846).

Jambor has been active in the International Association for the Child's Right to Play. At the association's meeting in Japan, fifteen countries participated in a special session on the need for play. The position paper (Jambor, 1990) that resulted from the conference addressed the play-education-child triad. The following points on the right to play were stressed:

1) the use of play throughout the entire educational process
2) the necessity of adults' recognition of the vital role of spon taneous play in the child's development
3) play as a means of improving the society of the future
4) the child's right to play as a means of reducing the alienation in society
5) the necessity of encouraging adults to recognize the importance of the child's right to play, and improving the natural, cultural, and interpersonal environment as a result
6) the necessity of adults seeing play through the child's eyes and providing activities in which children play freely and parents participate

A more recent statement of Jambor (1994) on children's right to play is more explicit: "The children of today should have the same opportunities for frequent, free play and the accompanying social develop-ment, as did children of past generations (p.19)."

### *Overstress on Academics*

In 1985, I organized the first conference on the "hothousing" of young children. The conference was reported on by the *New York Times* and generated national interest. The term "hothousing" was borrowed from the practice of using greenhouses to produce flowers and vegetables in record time. In the 1980's a growing number of parents were concerned about the early academic achievements of their children. One key issue was the push for reading and writing at the preschool level. With this stress on academics, kindergarten classrooms began to be structured with assigned seating and the value of free play was questioned (Gallagher, 1985; 1988; Gallagher & Coche, 1987). Children were being hothoused.

In an essay on "defending play" the authors (Scales, Almy, Nicolopoulou, and Ervin-Tripp, 1991) summarize the problem of hothousing:

The attention given to cognitive

> development in the period of rediscovery and debate about early childhood education had its effect on kindergartens as well as nursery schools. The young child's propensities for many kinds of learning were often interpreted as mere readiness for earlier academic work. Workbooks and drills often moved downward from first grade into kindergarten, where they replaced opportunities for direct experience with materials. A curriculum that had been based on play became a 3 R's curriculum. (p.19)

In sum, it is curious to note that as psychologists and educators became more interested in the cognitive development of children, the push for earlier "academics" became popular.

Now, in the 1990's, the reduction or elimination of recess is another outgrowth of the hothousing phenomenon. One of the key tasks of a kindergarten teacher is to communicate with parents on the necessity of play for both social and educational development and to resist pressures to make the curriculum overly academic. Help with this task is available in the vast amount of literature on developmentally appropriate practices in the resource list of the Clearinghouse on Elementary and Early childhood Education (ERIC). Articles like Stipek's (1994) directly address the need for teachers to foster parents as allies in the selection of appropriate curriculum and materials. (Other well known sources for developmentally appropriate practices include: California State Department of Education, 1988, 1989; National Association for the Education of Young Children, 1986).

### *Excessive Television Viewing*

Another factor in the narrowing of the play environment of children is excessive television viewing. The Annenberg Public Policy Center of the University of Pennsylvania (Jamieson, 1996) conducted a survey of 1,205 parents of two- to seventeen-year old children. The purpose of the survey was to provide "a comprehensive profile of the attitudes and viewing patterns of both parents and children" (p.1). Most parents reported that on a typical day their child watched two or more hours of television. However, more than three quarters of these parents (77%) do not believe their children are watching too much television, and a majority (55%) think that "television has done their child more good than harm" (Jamieson, 1996, p.3).

These findings give rise to some disturbing questions about the development of the preschool child: When do these children have time to engage in spontaneous play? Are these passive hours of television viewing hampering the development of creativity? Are the children denied opportunities for the development of negotiation skills that could be gained in group play?

The passiveness of television viewing is caught in this incident:

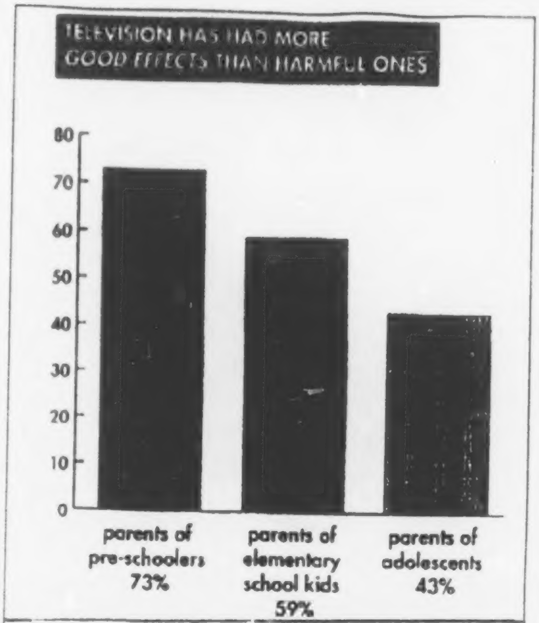
> Lisa, 5 years old, was sitting in a small rocking chair next to her father. Everyone in the living room was watching "The Land of the

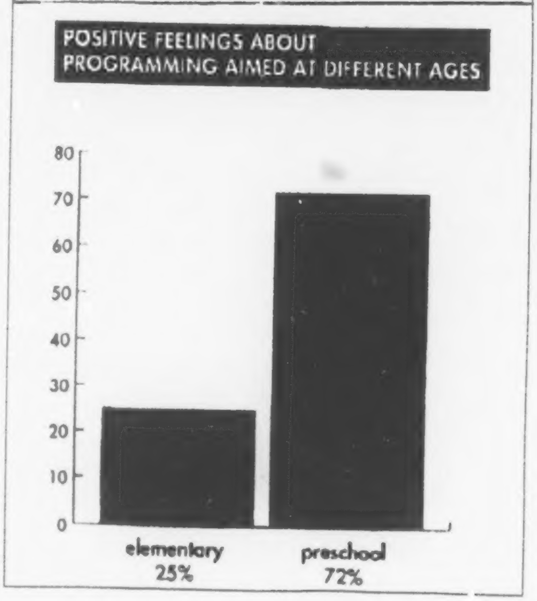
Giants" on television. Lisa is jumping around in her chair, doing a quiet humming accompaniment to her self. Her mother said, "Lisa, sit still and be quiet so we can hear this show." Lisa said, "That's o.k." Then she let out a sigh, looked at the television set, and said, "Yep, Shut up - that's the name of the game." (Koste, 1987, p.9)

Koste (1987) comments on Lisa's attempt to cope: "The need for action; 5-year-olds are not spectators, but players. However much good there may be in television, is there too much watching and too little doing in the lives of American children?" (p.9)

Two graphs included in the Annenberg Report are especially important to the kindergarten teacher.

The graphs (see Figures 1 & 2) show that parents are pleased with the amount and quality of programming for their younger children. One obvious inference from these findings is that parents of preschoolers actually encourage television viewing. This reinforcement of television viewing cuts deeply into the time children might use to plan and conduct their own play activities at home. All the more important, then, for the classroom to provide environments conducive to pretend play. (Note: an argument against excessive use of computer games could also be included here).





*Permission to reprint granted.*

Figure 1. Television has had more good efffects than harmful ones
Figure 2. Positive feelings about programming aimed at different ages

## CONCLUSIONS

We have come full circle in this fifth article on Piaget's symbolic function and the foundation of reading. It is clear that one cannot consider any one of the areas of the symbolic function without relating it to the others. This is especially true when the meaning of symbolic play is probed.

It is essential that play becomes once again the keystone of the kindergarten curriculum. When children are engaged in symbolic play, they are often engaged in conversation. At the same time they are drawing upon imagery to enrich their play. How difficult to think of the foundation of reading in terms of splinter skills such as drills in printing and alphabet recitations! The kindergarten classroom is truly a *garden* rich in the growing activities of dramatization, block building, drawing, writing, story telling and reenacting, singing, dancing and dreaming in a corner. And out of all of these activities, so rich in symbols, the joy of reading will sprout. Let's thank Jean Piaget for the rain.

## LETTER TO PARENTS

Dear Parents,

In this letter we have to consider together some very serious problems in our hectic society. The topic we want to explore is the importance of play in the lives of our children. The special areas of play that I want to emphasize is pretend play which is sometimes called symbolic play. Remember how when you were a small child it was so easy to play "house." One of your brothers or sisters would suggest a theme such as "dinner time." Maybe you really didn't have food but you pretended what you were stirring in an empty can was really soup for the meal.

Now the average child watches two hours of television a day. Although this viewing may be educational, the child is quite passive and not interacting with the messages. And today's children are engaged in many organized sports which do not permit them to actively plan their play.

Why do we consider pretend play so important in the daily activities of kindergarten children? First, notice that the activity uses symbols. In the above "dinner play" (1) the can symbolizes a bowl; (2) the stirring symbolizes "real" food in the can' and (3) serving of the soup to a "family" is a symbol of what happens at home that night. The kindergarten child is preparing to deal with a huge world of symbols. The separate letters c-a-t will have to become the verbal pronunciation of "cat."

All of these pretend activities are preparing your child to read. When children read, as when they pretend in play, they are involved in a world of symbols: the sounds of the individual letters, the meaning of individual words, the different meanings one word may have, the themes in stories and the descriptive words that build the characters in a story.

Children learn to develop their understanding of symbols by using images they already have (the can recalls the image of a container which may hold food). In the process of learning to read, the child must relate the story to images from her own real or imagined experience. For example, a child reads a story about a child caught in the rain. Images of his or her own wet hair and clothing, soggy shoes and dirty socks assist the child to understand the story and to build vocabulary. Children who frequently use images in pretend play have an advantage in reading comprehension because they have movie-like images for support.

Another advantage in participating frequently in pretend play is the child's opportunity to spontaneously carry on appropriate conversations. These conversations are not provided by the teacher but are sparked by other children and the child's own eagerness to participate. Again, the child uses images to support the play acting through dialogue and action.

Finally, children in pretend play need to learn to cooperate. Who will be the grocer today? What should we sell? What should we use for packaging? Who will make the play money? These social activities assist the child in learning how to negotiate the next act on the stage of playing.

I encourage pretend play in the classroom by setting aside a large area of the room for such play. The block-building area is large enough for the building of roads and bridges. Often during these activities I hear the children negotiating the type of structure and which "cars" will be permitted to travel.

At home you may wish to provide a television-free area where your child has a box of clothes for dress-up. A puppet theatre, blocks, and small tables and chairs (to be converted to a grocery store or postoffice) help to stimulate pretend play. Encourage your children to expand on stories through dramatizations. Do share with us what works for your child by providing photos and tape recordings of these dramatic events. They may help me to encourage other children to participate in the wonderful world of pretend.

Sincerely,

Your child's teacher

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# Addressing Kindergarten Students' Conflict Behavior: Encouraging Social-Cognitive Development

PAMELA S. LANE-GARON

A parallel is drawn between the natural course of development in young children's social-cognition and conflict-related behavior. Conflict is viewed as an important context in which children develop the ability to make inferences about others' thoughts and feelings. Given the role of conflict in providing children with opportunity to practice social skills, the use of a kinesthetic tool for facilitating interpersonal problem-solving among kindergartners is recommended.

Young children learn and thrive in social environments that encourage constructive, while discouraging destructive conflict. When teachers begin to socialize kindergarten children to problem-solve with their peers, it is important to remember that, as developmental psychologists have found, conflict has an integral role in social-cognitive development.

Freud, Piaget, Selman, and other developmental psychologists believed that young children are impulsive and egocentric. Preschoolers and kindergartners can be seen as typically preoccupied with their own desires and points of view. The perspective of "the other" is not a habitual consideration of these children, unless guided by an adult. The developmental nature of cognitive perspective-taking (the ability to make accurate inferences about the thoughts of others), when compared with the developmental sequence of children's interpersonal negotiation, clearly illustrates how dependent social processes are on cognitive acquisition (see Figures 1 and 2). Social processes that necessitate cognitive inference-making are essential to the development of conflict resolution skills and to social-cognitive development in general. Any kindergarten classroom process that allows for perspective-taking practice in the context of conflict will encourage development of social-cognitive abilities integral to forming adaptive interpersonal-relationships.

The discussion of theory, research, and practice presented in this paper will help kindergarten teachers

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establish such classroom environments and enable them to be better guides for students' interpersonal processes. The discussion begins with a presentation of social-cognitive models and proceeds to an examination of perspective-taking, empathy and implications for teaching. The use of a "Peace Bridge" (Johnson & Johnson, 1991) is described as an effective curricular means of guiding kindergarten children's interpersonal development.

## SOCIAL-COGNITIVE THEORETICAL MODELS

A theoretical model explaining the development of social-cognitive perspective-taking is offered by Selman and Byrne (1974) and Selman (1976; 1980). It is important to note that the model is characterized by wide age ranges, allowing for individual differences in rate of social-cognitive development. Levels of perspective-taking development are summarized in Figure 1.

**Level 0**: Egocentric, Undifferentiated Perspectives. Ages 3-7
  Sub Level A: Attribution of Self's View to the Other
  Sub Level B: Unwillingness to make Any Attribution
  Sub Level C: Same Situation = Same Viewpoint. Ages 4-9
  Sub Level D: Various Attributions Made. No Certainty.
**Level 1**: Understanding of the Unique Psychological Life of People
**Level 2**: Self-Reflective/Reciprocal Perspectives. Ages 6-12
**Level 3**: Third Person/Mutual Perspectives, Recursive Thinking. Ages 9 - 12
**Level 4**: Society or "In Depth" Perspective. Ages 12 to Adult

*Figure 1. Selman's Model of Perspective-Taking*

At Level 0 there is no awareness of "the mind," and this lack of awareness contributes to seemingly egocentric behavior. At Sub Level A the young child believes that all share one mind, his or her own. There is no awareness that others may think unlike the self. Sub Levels B and C are characterized by lack of differentiation demonstrating an understanding of person-by-context variations. For example, at Level B there is little motivation to make any inferences about the idiosyncratic thinking of others. At level C children anticipate that a situation evokes the same effect in everyone. For instance, a child opening gifts at a birthday party would *always* be expected to be happy, but some children are not comfortable in social situations and/or may not like the gifts they were given. This individual difference might not occur to a young child operating at Level C. At Level D the child begins to make attributions in a sort of random fashion. For example, attributing mean intentions to all children with freckles might be reasonable if the child had once been treated poorly by another with freckles.

Level 1 is marked by a kind of sophistication not seen in earlier stages. At this level the young child understands that people have different interpretations. This has been called by Dixon and Moore (1990) the *information effect*. At Level 2 the child additionally understands that people think differently because they may have different values. Dixon and Moore call this the *weighting effect*. There is disagreement about which of these *effects* can be observed earlier. However, agreement exists upon the notion that situational role (perspective) taking based on information is easier and prior developmentally to individual perspective-taking based on values. An example differentiating these effects might be a child's exposure to the Big Bad Wolf's point of view in which the Wolf was seen as merely protecting his property (his forest) against a trespasser (Red Riding Hood). Kindergarteners made privy to this new information will briefly entertain the new perspective and then consider the character "better" or "worse" than they previously thought. By contrast, in the Level 3 perspective-taking of preadolescents considering ethics scenarios in civics class, characters are often viewed as "better" or "worse" in reference to their abstract values viewed in the context of specific situations. At Level 4 high school and college students will make cognitive and affective inferences on a great many dimensions simultaneously. For instance, they make inferences not only about another's thoughts, feelings and possible motives for behavior in a specific context, but they may also consider the other's origins in terms of socioeconomic status, education level, psychological health, etc. We adults may not always apply all aspects of level 4 thinking. In other words, we may be cognitively capable of doing so, but how we are socialized affects the frequency of this type of perspective-taking.

Interpersonal negotiation ability is dependent upon individual social-cognitive development as outlined in Figure 1. Figure 2, which follows, offers a conceptualization of the interpersonal negotiation process. Kindergarten students' strategies are often naturally impulsive and physical (Level 0). Level 1 is characterized by appeasement. *"Say sorry,"* is the common solution to most problems. In Level 2 true cooperation begins to emerge. Differences between perspectives is realized by participants. In Level 3 mutuality is achieved through collaboration. This develop-mental level will not be reached by most kindergarten students, but an awareness of the developmental pro-gression of negotiation is essential if teachers are to be useful guides.

| | |
|---|---|
| Level 0<br>Impulsive | Strategies are impulsive and physical. They are based on egocentric and undifferentiated perspective-taking. Unreflective force, obedience or withdrawal may characterize strategies at this level. |
| Level 1<br>Unilateral | Attempts to control or appease are common at this level. Strategies depend on subjective perspective-taking skills. Perspectives are differentiated but not considered simultaneously. "Ordering" or "telling" or "will-less" submission may characterize this stage. |
| Level 2<br>Reciprocal | Strategies involve attempts to address the needs of both disputants through trades, exchanges and deals. Self-reflective perspective-taking differentiates between perspectives and allows for simultaneous perspective consideration.. Psychological influence is depended upon to change the opponent's mind. |
| Level 3<br>Collaborative | Strategies involve attempts to change both one's own and the other's wishes in order to develop mutual goals. Third-person perspective-taking is important as is perspective coordination. Strategies use shared reflection to facilitate the resolution process. Disputants demonstrate concerns for the relationship's continuity. |

Figure 2. **Developmental Stages of Negotiation** Adapted from Yeates & Selman (1989).

When children act egocentrically, their behavior is often termed "inconsiderate." Teachers sometimes view egocentrism as a precurser to interpersonal property disputes. In our culture, parents and teachers usually intervene and limit these interactions with prevention in mind. However, according to Vygotsky (1987), it is the adult's role in the *zone of proximal development* to create an opportunity to enhance socio-cognitive skills in the context of conflict with peers. In this framework, the goal becomes facilitation, rather than the extinguishing of conflict-related behavior. Adults who facilitate children's problem-solving interactions and remain aware of the developmental importance of conflict will allow a 'conflict moment' to continue and will guide the participants to a mutually satisfying outcome, when possible.

Piaget (1997) noted that as children experience social and cognitive conflict with peers, they come to realize that others have thoughts and feelings different from theirs. First, the young child comes to realize that the other may have a different point of view. This is termed the *existence phase*.

Second, there is a recognition of the need to make inferences about another's point of view—*the need phase*. In the third phase, the child actually *makes an inference,* and in the fourth condition, *application,* the individual applies knowledge gained from perspective-taking to the self's future behavior. In a mature person, these processing steps occur in milliseconds in every instance of perspective-taking and seem to be intuitive.

Considerable research has shown that perspective-taking develops in young children earlier than Piaget first believed. His clinical interviews supported the 5-7 range. However, it is now generally agreed that the perspective-taking deficit in pre-schoolers is less dramatic than Piaget first posited. Some studies reveal perspective-taking occurring in 3-and 4-year-olds (Costanzo, Coie, Grumet & Farnill, 1973; Feffer & Gourevitch, 1960; Flavell, Botkin, Fry, Wright & Jarvis, 1968; Newman, 1986). Today many theorists believe that most kindergarteners are able to entertain the perspectives of others, if only briefly.

## PERSPECTIVE-TAKING AND EMPATHY

All kindergarten teachers know students who can entertain another's point of view, even imagine another's related feeling and still not be moved to act in an altruistic fashion. Consider the sharing scenario: "*Johnny, do you see Alberto crying? He has been waiting for the scooter for a very long time. How do you think he's feeling right now? You have had a long turn. What are you willing to do?*" Sometimes, the answer (even from a good perspective-taker) is *nothing!* Thus, these naturally occurring moments, as described above, are not enough. Moments of empathy--when children engage in cognitive perspective-taking because they are affectively moved to do so--must take place frequently, if empathy is to be socialized. Teachers must create more opportunities for practice. Both cognitive perspective-taking and empathy are factors contributing to social competence.

Empathy has been considered *affective perspective-taking*. Many researchers differentiate affective from cognitive dimensions of empathy. Davis (1980) holds that the cognitive and affective components of empathy comprise an interdependent system in which each influences the other. He suggests that empathy includes three processes: two affective (*concern* and *distress*) and one cognitive (perspective-taking). *Concern* is other-focused affect. The child may be afraid or sad *for* another, while *distress* refers to self-focused affect. The child who is made highly uncomfortable by the pain of another may want to do something quickly to relieve this personal distress. The cognitive component, cognitive perspective-taking, refers to the making of inferences about another's thoughts. As a construct, it can be viewed as an ability, a process and a dispositional tendency. The tendency to consider situations from the point of view of others is affected by socialization and the goals of the socializing culture. For example, in dangerous neighborhoods it may be adaptive to think like a possibly threatening other in order to stay safe. And in a loving family, members may frequently make inferences about the feelings and thoughts of relatives to maintain positive family climate.

The affective aspects of empathy, such as concern and anxiety, are also correlated with biological temperament and contribute to the likelihood of helping when witnessing the distress of others. For example, an anxious, yet social individual may be the most empathetic helper in a distressing situation. The positive relationship between perspective-taking, empathy and altruistic behavior has been thoroughly documented (Hoffman, 1975-1987; Krebs, 1980; Davis, 1983; 1994). Currently, empathy is a research variable as well as a topic discussed in the popular press (Goleman, 1995). In the notion of *emotional intelligence*, the qualities of social competence that contribute to resiliency in children converge. The socially competent child is a good communicator and solves problems with peers appropriately. The relationship between cognitive and affective perspective-taking and general social competence is strongly supported in the research literature. Social competence, as defined by Ford (1982), is "the attainment of relevant social goals in specified social contexts, using appropriate means and resulting in positive developmental outcome" (p. 324). Ford concludes that socially competent individuals are "more cognitively resourceful; they are better able to think of ways to address interpersonal problem situations and to construct coherent plans or strategies for resolving them" (p. 324). Ford's work also supports the relationship between empathy and social competence.

## IMPLICATIONS FOR TEACHING

Even in this era of academic standards, assessment, and accountability, curriculum development in social-emotional domains is burgeoning. Educators agree that the development of perspective-taking and empathy are social-cognitive goals. The "developmentally appropriate" curriculum strives to encourage consideration of the thoughts and feelings of others. Literature in which protagonists experience and talk about feelings is read and discussed. Strategies for peaceably dealing with conflict in the classroom are directly taught. Naturalistic opportunities to practice interpersonal conflict resolution are valued and teachers personally model empathic behavior in their interchanges with staff, students, and parents.

When tragedies that involve children occur and then repeat themselves across the country, we struggle to programatically address the multidimensional and complex phenomenon with curricula on impulse control, problem-solving, empathy building, and anger management. The aim of this paper is to encourage teachers to view the formal and informal "teaching" of conflict management as part of developmentally appropriate practice. With that goal in mind, a kinesthetic strategy is suggested for classroom use.

Most teachers agree that providing opportunities to practice social-cognitive skills is essential. However, the desire to create a safe environment for our children and issues of classroom management often get in the way of meeting the developmental needs of our students.

*Conflict in the classroom*

It is in the social process of conflict in and out of the classroom that perspective-taking is practiced and encouraged. However, Kreidler (as cited in Bodine & Crawford, 1998) noted:

> Instead of conflict resolution processes that allow those in conflict to constructively problem solve, the [*educational*] system appears to view conflict as unnatural and unwanted. Disputes are settled by an adult arbitrator or, more frequently,disputing students are advised to avoid each other or the problem situation. These common practices do not prepare students adaptively for life. (p. 6)

The importance of peer conflict is also highlighted by Slavin (1997):

> When peers have disputes among themselves, they must make concessions and must cooperate in resolving them if the play is to continue....Peer conflicts also let children see that others have thoughts, feelings, and viewpoints that are different from their own. Conflicts also heighten children's sensitivity to the effects of their behavior on others. In this way, peer relationships help young children to overcome the egocentrism Piaget described as being a characteristic of preoperational thinking. (p. 77)

"Natural" socialization of children in conflict situations has varying outcomes. Some children develop excellent social skills, growing in empathy and assertiveness with maturation and experience. Others, as we know, become bullies or victims and later, perhaps, isolates or gang members. Because of these differential developmental outcomes, many educators of young children offer a structure for interpersonal problem-solving that equalizes power, encourages awareness of disparate points of view, and emphasizes recognition of feelings.

As we know, educators of young children encourage social-cognitive development in every dimension of their programs. In the constructivist classroom social interaction is a context for all skill development. Indeed, it is difficult to select an aspect of the day that is not devoted to furthering the development of socially competent children. For example, to encourage the development of empathy in the young, sharing literature in which characters talk about feelings is recommended. Also, direct teaching about feelings strengthens and expands the necessary social-emotional vocabulary and needs to include making use of the *conflict moment*.

These program elements, however, are necessary though not sufficient to promote effective interpersonal skills. When children are involved in naturally occurring conflict, for example, the skillful teacher allows and guides their process. Nonetheless, these occasions are too infrequent to provide sufficient opportunities for practice. This is due, in part, to classroom discipline systems that do not discriminate between interpersonal conflict and rule infraction. Teachers who recognize the young child's need to practice interpersonal problem-solving will make a distinction between issues the children can address themselves and discipline actions necessitating teacher-led discussion of naturally occurring consequences. Classroom management recommendations include an emphasis on "multiple levels." For example, one structural level is represented by (1), a set of rules or agreements that guide the behavior of the group. Most kindergarten teachers build this list of desired behaviors and consequences for infractions in the first day discussion with their students. A summary of this level is often seen on a wall poster, *Class Rules*. Another structural classroom management level is comprised of (2), behavior plans constructed to address individual differences. Some children with attention-deficit hyperactivity disorder (ADHD), for example, may require personalized plans, as the guidelines for the group are, for them, distal rather than promixal goals. A behavior plan might consist of an arrangement between student and teacher in which three occasions for interrupting others are allowed within an hour, in contrast to the group rules where interrupting the speaker is considered an infraction with a consequence attached. And finally, there needs to be a structural level of classroom management that provides (3), a system for addressing interpersonal conflict. The teacher includes an introduction to this tool or model in first-day procedures. A conflict role play will help children visualize themselves using the procedure at a later time when they may be angry or frustrated. The time to teach the classroom procedure for interpersonal problem-solving is early and in an atmosphere of calm. Such a model, as the one discussed below, normalizes conflict and communicates its value to students and parents alike. With this level of classroom management in place, interpersonal problem-solving opportunities and teacher guidance addressing behavior will maintain balanced focus.

Therefore, educators in kindergarten-primary classrooms have need of developmentally appropriate tools that facilitate the teaching of and provide practice in cooperative problem-solving. One such tool, a "Peace Bridge" or "Path", introduced by Johnson and Johnson (1995), encourages *scaffolding* and is kinesthetic by design.

One step of interpersonal problem-solving is written on a corresponding step of the '*bridge*' or '*path*.' The actual materials are teacher's choice: butcher paper, oil cloth or actual wood planks with clothesline connecting the steps. The steps on the bridge are labeled from the ends moving inward: 1) *agree to the rules* [*work hard, no interrupting, be honest, no put* downs], 2) *Tell your Story & Share your feelings*, 3) *Wants and Willings*, and finally... the planks in the middle say: 4) *Solutions*

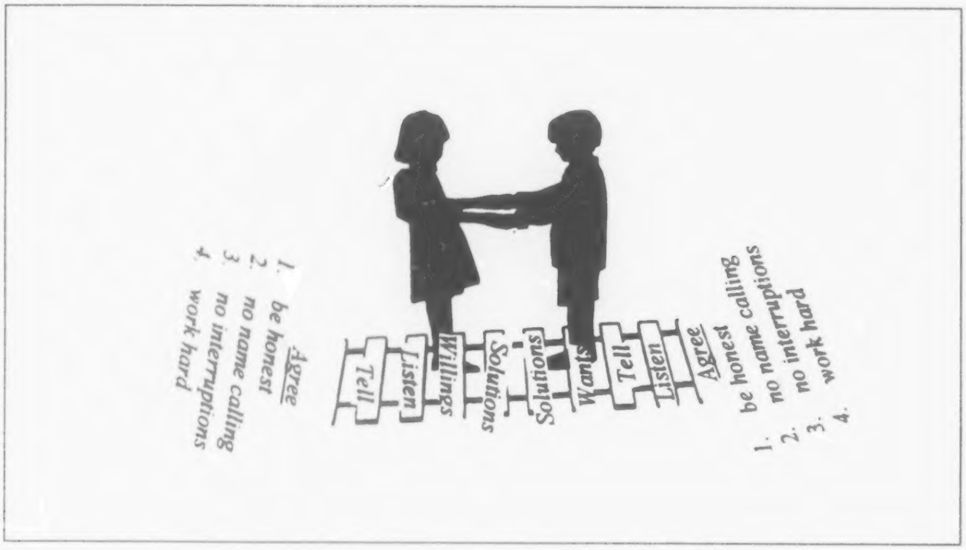
Agree
1. be honest
2. no name calling
3. no interruptions
4. work hard
Tell
Listen
Willings
Solutions
Solutions
Wants
Tell
Listen
Agree
1. be honest
2. no name calling
3. no interruptions
4. work hard

Figure 3. *Peace Bridge*

With the tool on the floor and one disputant standing on each end of the polarized path, movement toward the center is facilitated by the teacher or peer mediator, that is, an older student trained in conflict resolution skills who helps younger children walk and talk through the steps on the *peace path*. This approach has been used successfully in schools such as Chavez Community School in Phoenix (Lane-Garon, 1997) and Bethune Elementary in Fresno (Lane-Garon, 1998). Eventually, kindergartners can negotiate the steps of conflict resolution themselves. This conflict resolution tool is typically kept on the floor in the classroom and is often painted on the sidewalk outside. Many students appear eager to use this safe, kinesthetic aid to interpersonal conflict management. By contrast unstructured and alternative approaches have sometimes left children scared, discouraged and prepared for future aggression.

The process of teaching children to use a *peace path* or *bridge* recognizes conflict as a normal part of everyday life and provides a structure within which essential cognitive perspective-taking and affective inference-making skills are practiced. As with every effective procedure, the teacher should introduce the *peace path* (in the first week of school along with classroom rules or agreements) as an important classroom tool to be used with care.

## EFFECTIVE INTRODUCTION OF THE PEACE PATH OR BRIDGE

*Lesson One* should include teaching of the four agreements necessary to use the process: be honest, no name calling, no interrupting, work hard to solve the problem. Children may contribute these preconditions to conflict resolution or teachers may prescribe them. What is important to convey is the rule in the dispute resolution process. If disputants agree to the rules, then they may proceed to step one of the bridge. *Lesson Two* may include role playing a typical classroom conflict. Two "disputants" take their places on the polarized ends of the bridge. The teacher facilitates as the students learn the steps. A guidance comment might go something like this, "Now that you have agreed to the four rules of problem-solving you may begin." "Please tell what happened, Eva; Kim will listen." "How did you feel about the problem?" "Did you know she felt that way?" "Now it's your turn, Kim, thanks for waiting. Please tell your story." The teacher has the disputants tell their story in turn and makes feelings available by asking questions and paraphrasing the answers. "So, it sounds like you felt sad, Eva, and Kim, you felt frustrated; is that right?" The teacher/facilitator maintains neutrality with a focus on keeping the process going. *Lesson Three* may focus on the telling of *Wants* and *Willings* in which disputants say what they want and what they are willing to do to solve the problem. The teacher continues to paraphrase and summarize. In *Lesson Four*, the disputants, with the teacher's help, verbally gather together all their *Wants* and *Willings* into a *Solution*. The solution is summarized and disputants consider their problem resolved.

What sounds like a lengthy introductory process is merely an explanation of the steps while demonstrating with a segmented role play. After whole class introduction, the bridge can be placed in a center with a peer or parent helper. Once every student has been through a role play and "felt" the process, class decisions can be made with respect to where the tool is kept, what kinds of problems are appropriate for its use, the role of the facilitator, and when the students may use it.

Eventually, an increase in independent cooperative problem-solving is achieved and a classroom norm is reinforced, "Conflict is OK. Hurting is not." The facilitator's presence (whether teacher, parent volunteer, or older student mentor) can be gradually faded as the students become more familiar and proficient with the process.

The use of a *peace bridge* in the kindergarten classroom is particularly appropriate to the encouragement of social-cognitive processes. The following model summarized in Figure 4, was adapted by Yeates and others (1991) based on the work of Selman (1980). The steps of interpersonal negotiation are described. It is no accident that the steps on the peace bridge parallel those of this interpersonal model. In their use of the *peace bridge*, kindergarten students are able to approximate the steps of interpersonal problem-solving as outlined. The tool itself and the facilitator's guidance together act as scaffolding for young learners who might otherwise solve the problem by merely doing what the teacher (arbitrator) says. The developmental value of the tool and process is clear.

| | |
|---|---|
| Step 1.<br>**Defining the Problem** | Accurate definition of the social problem. The manner in which the problem is defined clarifies goals. |
| Step 2.<br>**Generating Alternatives** | Brainstorming--articulating possible resolution options. |
| Step 3.<br>**Selecting and Implementing A Specific Strategy** | The focus of this step is on the selection and enactment of a particular strategy from the verbalized alternatives. Emphasis is on the anticipation of the consequences of the choices. |
| Step 4.<br>**Evaluating Outcomes** | A tendency to evaluate results simply and absolutely progresses to a tendency to weigh outcomes in a more complex and relativistic fashion. This step focuses on "fine-tuning" negotiation strategies in response to feedback from the environment. |

Figure 4. **Interpersonal Negotiation Sequence** Adapted from Yeates, et al., (1991).

This article has attempted to emphasize the developmental importance of conflict in young children's emerging social cognition, to identify specific cognitive and affective processes associated with social competence, and to suggest a classroom approach for providing guided practice in conflict resolution. Based on perspective-taking research, a way to allow conflict in the classroom has been presented. Whether a *bridge* or a *path*, when combined with classroom literature-based curriculum emphasizing empathy and personal responsibility for feelings and behavior, an age-appropriate conflict resolution process encourages social-cognitive development and socializes kindergarten students to cooperatively engage in their own conflict management.

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# Building Parent-Teacher Partnership Through Dialogue Journals

Harriet Neal and Joyce Daniels

Research indicates that a colaborative model that furthers two-way relationships between home and school benefits children, families and schools. The challenge for educators who embrace this model is to develop methods to actualize a home-school partnership to guide children's learning. This qualitative study examined the use of dialogue journals as one method by which teacher and parents may share information about the child at school, the child and family at home, and information of personal nature about the teacher and parents to facilitate meaningful two-way communication. Two questions guided this investigation: Does the journal process assist in the development of an interactive relationship between parent and teacher? Does the content of the dialogue journals inform both parent and teacher about a child's development when they both contribute written information? A content analysis of the journal entries supported the use of dialogue journals between teacher and parents as an effective method to further a collaborative model of home-school relations. An end-of-the-year survey to elicit parent perceptions about the effectiveness of the journals as a communication tool reinforced the data analyses.

This article describes a study that examined the use of dialogue journals between a teacher and parents to strengthen their communication. Research consistently demonstrates that the strength of the connection between home and school influences the children's experience and thus the learning process. A strong home-school interconnectedness acknowledges that schools alone cannot account for all a child learns. Schools and families are partners in this process. Further, when students, families and schools are connected, they are more effective in their respective roles.

Some benefits children receive when schools and families work together are higher achievement, better attendance and better student behavior, as well as a positive attitude on the part of both students and parents toward schools (Baker & Stevenson, 1986; Comer, 1986; Comer & Haynes,1991; Beane, 1990; Lazar & Darlington, 1978). Children are also more likely to continue education after high school when they come from schools that work with families to support learning (Henderson & Berla, 1994; Bloom, 1985; Eagle, 1989).

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Parents have more confidence in their parenting role and in their ability to help their children succeed in school when parents and schools work together (Swick, 1988; Wissbrun & Eckart, 1992; Cochran & Dean, 1991). This relationship encourages parent participation in school and community because they see that their part in the education process is valued (Delgado-Gaitan, 1991).

Schools also benefit from a strong home-school relationship. Parents are more likely to respect teachers and support schools when they are respected and supported in their parenting roles (Seeley, 1989). Such respect results in parents as volunteers for school activities, rich curriculum resources, connections to the local community, financial supporters, and political supporters when education issues are on the ballot. In addition, a better school learning environment can result when teachers feel supported by families (Hoover-Dempsey, Bassler, & Brissie, 1987).

Historically, four models of home-school relations have emerged. One view of this relationship emphasized the separation of home and school. The school was responsible for the child in the classroom, the family was responsible for the child at home, and these responsibilities did not intersect (Waller, 1932; Parsons, 1959).

A second home-school relationship model emphasized the family as a supporter of school activities and policies. The parent's role as educator prepared children for school; then the school took over. In this type of home-school relationship, schools recognized that children's learning was influenced by the home environment, but schools functioned as educational experts with little input from parents. The school told parents what they could do to help children succeed as learners and parents did what the school asked.

A third model was one of "engagement" between school and home (Wissbrun & Eckart, 1992). Schools dropped their autocratic role in this model, and the mutual influence of both home and school was acknowledged (Epstein, 1990). The school recognized that two-way communication between home and school was important and encouraged parents to participate in their children's education. Schools even encouraged and included parents in enriching the curriculum offered to children and in deciding policies of the school, but the quality of home-school contact remained ritualized and impersonal because the methods of connecting and attitudes about connecting remained embedded in tradition (Swap, 1993).

A fourth and most recent model of the home-school relationship views parents and teachers as collaborators and partners and describes the relationship itself as one of shared responsibility (Bredekamp, 1997; Henderson & Berla, 1994; Swap, 1993). This model emphasizes interaction and an interdependent relationship between home and school. Both families and teachers are knowers and learners about children. Teachers bring their general knowledge and experience about child development, learning, and appropriate curriculum into the relationship, as well as their observations about a particular child's development. Parents bring their knowledge about their child into this relationship, as well as their values, their background, their sharing of events at home that affect the child at school, their parenting style, and in many cases a culture and language that may be different from those of the teacher. The educational success of children is strengthened when families and teachers interact to share this information.

An effective home-school partnership relies on two-way communication, which respects the knowledge that both schools and families bring to education (Brand, 1996; Lindle, 1989; Orlosky, 1992; Williams & Chavkin, 1989; Swap, 1993; Southern Regional Education Board, 1994; Simich-Dudgeon, 1993). This two-way communication incorporates diverse family structures and/or cultures and gives a voice to the ecology of the community, whether the school community is urban or rural, stable or transitional (Comer & Haynes, 1991). Two-way communication helps parents and educators recognize that they need to share information to achieve the common goal of educational success for all children (Epstein, 1991).

One method of fostering two-way communication in schools may be through the use of dialogue journals between teacher and parents. Dialogue journals have been successfully used to foster communication between teacher and students for some time (McGrath, 1992). However, the concept of using interactive journals between parents and teacher as a method to communicate about a child's progress is relatively new. Aronson (1995) makes the suggestion as a method to communicate about a child's progress. However, she provides no documentation to support this concept. A search of the literature revealed one study by Harding (1996) where dialogue journals were used to initiate dialogue with parents about reading interests of children at home and in school. She discovered that information in the journals about children's home experiences helped her learn more about each child in her class, and parents valued the teacher's journal observations about their child's development at school.

Given the paucity of research in this area, further studies are needed to examine the efficacy of dialogue journals in fostering two-way communication between teachers and parents. The present qualitative study was conducted to investigate this research topic.

### *Research Questions*

The purpose of this study was to provide answers to the following questions:

1. Does the journal process assist in the development of an interactive relationship between parent and teacher?
2. Does the content of the dialogue journals inform both parent and teacher about a child's development when they both contribute written information?

## METHODOLOGY

Dialogue journals were used as a method of communicating with and building relationships between families and school in a Parent Education through Parent Participation Preschool class at an elementary school in northern California during the 1996-97 school year. The parents and teacher participated in a nine month dialogue journal process in which both were given the opportunity to communicate in writing about children's experiences and development. The teacher in the class was both researcher and participant in the study. A culminating survey was also completed by parents at the end of the school year. An analysis of the dialogue journals and the survey results was completed to address the two questions in this study.

### *Parent Participants in the Program*

Twenty-two families were originally enrolled in the Parent Participation Preschool class of which twenty-one agreed to take part in the study. Four families moved during the school year, leaving a total of seventeen participant families. Parents were given an explanation of this study and its purpose during the orientation process in the fall of 1996. Parents volunteered to participate in the study by signing an agreement (see Appendix A). The agreement to participate in the study included parent assent to release information from the journals with the understanding that such excerpts would remain anonymous.

The seventeen families who participated in this study were mostly from middle to upper middle class economic backgrounds. The children in the class were from two-parent families. The fathers worked full time. Twelve of the seventeen mothers either did not work outside the home or worked part time outside the home. The five families with two parents working full time were either able to adjust their own work schedules to participate or had extended family who agreed to participate in the classroom. In one case, the nanny carried out weekly classroom assignments, and the parents shared the other participation responsibilities.

The ages of parents ranged from early twenties to early forties. Twenty-four percent of the parents in the class were in their twenties; fifty-nine percent were in their thirties and eighteen percent were in their forties. The educational background of parents ranged from high school graduate to post-graduate in college. Of the thirty-four parents in the study, fifty-three percent completed high school; six percent received AA degrees; twenty-six percent received BA or BS degrees and fifteen percent completed post graduate work to obtain a California teaching credential or a Master's degree.

Family ethnicity in this class was ninety-five percent European-American. Five percent of the families were Asian-American. This closely paralleled the student population of the school at which this study took place. Both parents from sixteen of the families spoke and wrote English as their first language. The parents in one family spoke and wrote Farsi as their home language and were fluent in English.

*Procedures and Measures*

All families, regardless of participation in the study, were given blank journals in the fall. There was one journal for each child in the class. The journals were kept in the classroom where parents could read or write in their own child's journal at any time. Parents could also take their own journal home to write or share information with another family member. Non-parent entries in the journals were observations by the teacher and mini-observations written by parents participating in the classroom. These mini-observations were later placed by the teacher in the respective children's journals. The journals were not kept in a locked file; therefore, the potential for parents to read a journal other than their own child's was present. However, in September, parents agreed to an honor system of privacy about the contents of each journal. As far as the researcher knows, this agreement was not abused. The journals were used throughout the school year and completed in May when the program ended.

*Journal Design*

Three sources of entries, which were designed to be contained in each child's journal, are described in this section. Each source was an essential part of the dialogue journal process and a necessary ingredient for this interactive communication technique between teacher and parents. The three sources of entries together provided a chronicle of each child's development.

One source of entry came from mini-observations recorded by parents as they worked in the classroom and watched children interacting in their various activities. These mini-observations, which were recorded weekly by all parents, were placed in the journals. The mini-observations consisted of brief, written, anecdotal descriptions of a child's language or behavior during the morning and provided the main information source about each child's development. Parents were trained in the fall about mini-observation procedures. The training consisted of an explanation and examples of anecdotal observations with a list of the types of information to include in the observations. Parents then completed an exercise in small groups in which they were given some examples of observations and opportunities to discuss the language used in them.

The mini-observations that parents completed each day were dated and placed in a binder at the end of the morning. Once a month these observations were removed from the binder by the teacher/researcher and placed in each journal. Thus the continuity of a child's growth throughout the year was chronicled and easily accessible in the dialogue journals to both parents and teacher.

The second source of journal entries consisted of teacher observations and responses. These were introduced into the dialogue journals each month to provide additional child development information at school and to encourage interacton with parents. Parents could read the observations at the monthly evening parent education classes and respond or reflect on the observations if they desired.

Space was provided for the third source of journal entries, which were parent reflections, responses and questions, and parent-teacher interaction. Most of these entries provided the teacher/researcher with information about each child's development at home. Frequently, child behavior was the source for parent-teacher interaction. However, communication about life issues of a personal nature also occurred, which furthered the goal of parent-teacher collaboration.

When parents received their journals in early September, they were told that they could use them to write responses, reflections or questions about the mini-observations and teacher observations. This invitation, however, produced no parent reflections in the journals. The teacher/researcher realized that the introduction of a method for encouraging parents to write was necessary. After examining the literature on strategies that others adopted to encourage journal writing, it was decided that a question would be presented for parent response at the next evening parent education class. The parents were then asked to tell the most important things they wanted the teacher to know about their child. Thirteen of the seventeen parents responded in writing. Four did not respond because they did not attend the class that night. Thereafter, parents were given about ten to fifteen minutes each month at the evening parent education class to either reflect on observations from the previous month or to reply to a direct question or activity. (See Appendix B for a list of the directed activities.) The teacher then read the responses during the month and replied in writing, if appropriate, before the next month's class.

Copies of the journals were made with parent consent for data analysis. The copies were then placed in a binder where each journal was coded alphabetically by the child's first name and numbered. This allowed for ease in reading the journals and in referring to specific entries in the journals and also preserved the anonymity of parents and children. The original journals were then returned to the parents.

### *Analysis of Journals*

A content analysis of the journals was completed to address the questions that guided this study:

1. Does the journal process assist in the development of an interactive relationship between parent and teacher?
2. Does the content of the dialogue journals inform both parent and teacher about a child's development when they both contribute written information?

The first question investigated the influence of the journaling process on the development of an interactive relationship between parent and teacher. An interactive relationship in education requires input from both teacher and parents as the sources of information and centers on the developing child as the focus of the information. There were three types of information examined in the journals:

1. Information about the child at school contributed by parents and teacher.
2. Information about the child and family at home provided by parents.
3. Information of a personal nature between the teacher and parents.

These three types of information were essential to the development of an interactive relationship since they helped families and teacher learn about each other.

The second question that guided the content analysis asked the extent to which dialogue journal entries informed parent and teacher about a child's development when they both contributed written information. Progress in four areas of development informs adults about children's growth. The analysis of the journals included an investigation of the entries that reported child development in the following four areas to answer question two:

1. Social/emotional development, which focused on a child's sense of self and relationships.
2. Cognitive development, which centered on thought processes, concept development, and problem solving skills.
3. Expressive language, which told what a child said or quoted a child's words.
4. Physical development, which noted senses development and gross and fine motor skills.

Development is a process; therefore, journal entries were also analyzed for evidence of developmental growth of children over time.

### *Survey Procedures*

*Purpose and design*. In addition to the content analysis, an end-of-the-year survey was distributed to all parents, completed, and returned to the researcher to elicit parent perceptions about the effectiveness of the journals as a communication tool (see Appendix C). The survey was written and revised three times for content and clarity of questions with the assistance of three colleagues and a psychologist. In addition the survey was field tested by five colleagues, one psychologist and two parents who were not currently participants in the class.

The tool included thirty statements of which three were open-ended. A five-point Likert-type scale was used with twenty-seven statements. Possible responses consisted of the following: Strongly Agree; Agree, Undecided; Disagree; Strongly Disagree.

## RESULTS AND DISCUSSION

This section contains the results of a content analysis of the journal entries and an analysis of survey statetments that addresses the questions that guided this study:

1. Does the journal process assist in the development of an interactive relationship between parent and teacher?
2. Does the content of the dialogue journals inform both parent and teacher about a child's

development when they both contribute written information?

The first question was investigated by examining occurrences of three types of information necessary for an interactive relationship to develop. The second question was addressed by an examination of journal entries about the four areas of child development. Included are excerpts from the dialogue journals. Parents agreed to release information from the journals for use in the study with the understanding that such citations would remain anonymous. Therefore, names are coded to respect the research agreement. Survey results provided information about both the processes of relationship building between parent and teacher and the content of the journals regarding the development of children.

## *Data from the Journals*

### *Developing Interactive Relationships*

The first question to be considered was whether the dialogue journal process assisted in the development of an interactive relationship between parent and teacher. A content analysis of the journals examined occurrences of three types of information.

1. Information about the child at school contributed by parents and teacher.
2. Information about the child and family at home contributed by parents.
3. Personal information about the parent and teacher.

*Information about the child at school.* The dialogue journals revealed much information about the child at school. There were mini-observations made by participating parents such as: "Mu played in the house area with Jo. She told me that Jo was the doctor and he was going to hit her in the knee with the hammer" (Roberts P P P C, 1997, Vol. 11, p.5).

There were also observations written by the teacher:

> I brought a solar music box (to school) and told the children they could figure out how to make the music. Th was with the children in the quiet area. She suggested that Za take it outside. A few minutes later he ran in and came and told me, "The sun makes the music!" He showed Ba. Ba showed Ca. Za was a discoverer and a teacher! (Roberts P P P C, 1997, Vol. 17, p. 10).

All seventeen journals contained information about children's activities at school, which was not surprising since the mini-observations by parents were a requirement for the class. The number of entries in the journals about children's activities at school ranged from forty-seven to ninety-three, with sixty-nine being the average number of school information entries. (See Table 1). The number of entries in each journal seemed to be related to several conditions: High numbers of entries occurred if the child attended school regularly, if the parents working in the classroom wrote observations, and if the child was highly verbal.

Table 1. Percentage of entries from three types of child information sources

| Mini-observations | Teacher Entries | Parent Entries | Total |
|---|---|---|---|
| 65-80% | 11-27% | 2-8% | 100% |

*Information about child and family*. The second type of information on the development of interactive relationships is about the child and family at home. Parents usually wrote this type of information in the journals, often in a direct response to questions posed by the teacher at a parent education class. One directed activity, for instance, asked, "What do you want me to know about your child?" One parent responded with the following information: "Jor is the youngest of our two boys. He's very physical and enjoys lots of outdoor activities including bike riding, fishing and hiking. He enjoys learning about animals" (Roberts P P P C, 1997, Vol. 7, p. 6). Sometimes information about a child's family was communicated through something a child said and a parent or the teacher recorded. For example, one day the teacher reported an art activity: "Ke made a dinosaur rubbing for 'my sister' and one for grandpa in Las Vegas. As he was doing the one for his grandpa, he said, 'He's really old'" (Roberts P P P C, 1997, Vol. 9, p. 15). Ke told the teacher about his grandpa and she recorded what he said for his journal so the information could be shared with his parents. In another case a parent wrote that:

> Jo shared a story about how he went fishing at night, and the fish ate all the worms, but they didn't catch any fish. He thinks the next time he's going to tie the bucket to the string and put a worm in it to catch a fish (Roberts P P P C, 1997, Vol. 6, p. 38).

Information about the child and family at home was available to both parent and teacher on a continuing basis in the journals. There were entries in all seventeen journals about a child and his family. Instances of this type of information ranged from 6 to 24, with an average of 11.5 examples in each journal (see Table 1). The number seemed to depend on parent attendance at parent education classes, child attendance at school, and language activity of the child.

*Information of a personal nature*. Teachers and parents share personal knowledge about themselves in the third type of information necessary for the development of an interactive parent/teacher relationship. This type of information was noted in the journals when parents wrote and revealed memories about their own childhood or current events that occurred in their family's lives in response to directed activities at parent education classes. For example, one parent, who grew up in Iran, wrote:

> My favorite holiday memory is when I was ten years old on the first day it snowed. My cousins and I all five of us went to a hill that was close to our house and we had five tires and we hooked them all together and we all sat on them and came down the hill and it was so much fun spending time with my family and I miss those days (Roberts P P P C, 1997, Vol. 12, p. 11).

The teacher's mental image of life in Iran broadened after reading this entry to include a snowy winter. In January another parent wrote:

> Bittersweet is an appropriate summation of this past Christmas.... it was not until we lost a family member on the 28th that I realized how fortunate we were to have spent happy times with her, no matter how brief, on Christmas Eve. So I will remember her smiles and laughter in enjoying watching her son delighting in the presents and tearing them open (Roberts P P P C, 1997, Vol. 17, p. 20).

Entries such as these enabled the teacher to see the child in a broader context and added additional pieces to building the parent-teacher relationship.

The teacher also revealed information about herself. One of the activities at a parent education class was a discussion about values and how we teach those values to our children. One parent wrote in her journal, "My oldest daughter is six now, and I'm finding that I have to work hard to 'live' the way I want her to 'be'" (Roberts P P P C, 1997, Vol. 14, p. 9). The teacher responded:

> I remember when my younger daughter was about three, she was playing 'going to a meeting' with her friend who was also about three. It happened to be at that time that Brauley's mom and I were going to meetings at night about once a week to get a K-2 class started for our older children at the local school. I remember being so surprised that they picked up on that and then watching to see how they played it.... the whole episode made me think about all the ways we parents teach! (Roberts P P P C, 1997, Vol. 14, p. 10).

Seventeen parents wrote information about themselves in their journals, ranging from two to seven examples, usually in response to a directed activity (see Table 1). The teacher wrote information about herself in fifteen out of the seventeen journals, ranging from one to three examples, usually in response to a parent concern or to a parent question (see Table 1). The researcher compared the numbers of parent entries about themselves to the number of teacher entries about herself in each journal to see whether the number of teacher entries influenced the number of parent entries or vice versa. There appeared to be no relationship between the two. It was noted that in two journals, there were no entries by the teacher about herself, yet each of those two journals contained three entries by parents about themselves. It seemed that what influenced parents to write about themselves in the journals was the type of directed activity and parent comfort level with writing and revealing personal information. The progression of time to develop relationships seemed to be another factor. Most parents made entries about themselves after the first few months of school when parent/teacher relationships were established.

### *Child Development Information*

Question two of this study was answered by examining the journals for entries about four areas of child development.

*Areas of child development.* Each entry-item from the three types of information, i.e., mini-observations, teacher observations, and parent reflections, was categorized according to the Dodge & Colker (1996) guidelines in The Creative Curriculum for Early Childhood (see Table 2).

Table 2. Percentage of entries about four areas of development

| Social/Emotional | Cognitive | Language | Physical | Total Entries |
|---|---|---|---|---|
| 10-31% | 13-34% | 9-38% | 22-48% | 100% |

Entries that focused on a child's sense of self and relationships were placed in the social-emotional category. An observation about Ri's reaction to her mom's departure belongs here:

> When her Mom left she began crying. She was picked up and was being taken to the window to wave to Mom, but when we passed by the sit-upons she reached out and picked a blue one. She wiggled down and sat on her sit-upon in the circle and stopped crying! (Roberts P P P C, 1997, Vol. 14, p. 16).

This entry helped provide teacher and parents with a continuing picture of Ri's adjustment to the school environment.

Child observations that centered on thought, concepts and problem solving went into the area of cognitive development. Observations about children's behavior give parent and teacher a window into their thought processes. In the following journal entry, we learn Dy's step-by-step thought and action process in role-playing: "Dy took out everything from under the sink. He went and got tools and said he was a plummer"
(Roberts P P P C. 1997, Vol. 4, p. 18).

Children in the preschool classroom are learning about a variety of concepts. Experiences in literacy, math, science, art and music are part of an early childhood curriculum.

Observations that focus on these disciplines reveal the process of growth that occurs as children gain an understanding of the concepts within each discipline. Mo's understanding about time and math are disclosed in the following entry: "When Mrs. D rang the clean-up bell . . ., [Mo] was in the house area at the clock. She said, 'No, it's time to play' as she changed the arms on the clock" (Roberts P P P C, 1997, Vol.12, p. 17).

Another area of cognitive development that is nurtured in the preschool classroom is problem solving. Written observations about problem-solving behaviors assist the teacher and parents in knowledge about a child's progression in this area. The following example shows that Za used his problem-solving skills to figure out a way to change his activity:

> Za made a choice during work time. A few minutes later he came over to the choice board and said he changed his mind. I asked him if he wanted to move his card to another place. He said yes, moved his card and went off to his second choice (Roberts P P P C, 1997, Vol. 17, p4).

Dodge and Colker include language in the cognitive development area, but the teacher/researcher decided to separate expressive language so as to examine the frequency of such entries in each journal. The Child Observation Record, which is the assessment tool for High/Scope Curriculum (1991), also considers expressive language as a separate category from other cognitive areas that the tool defines. Entries that told what a child said or that quoted a child were placed in the language group. Such entries help parents and teacher learn about a child's ability to articulate and communicate ideas to others. For example, in the following activity, children in small groups were drawing a picture of an animal they wanted to become. Ni was able to think of an animal, draw it and then tell about it: "Ni said if he were an animal, he would be an '...alligator so I can be in water.'" (Roberts P P P C, 1997, Vol. 13, p.2).

Observations that referred to gross and fine motor skills and the senses were placed in the physical development category. "Ja can get the swing going all by himself!" (Roberts P P P C, 1997, Vol. 5, p. 8). Observations of this kind give the journal reader information about a child's new skill.

Some observations included information in several developmental areas; these entries were counted in all appropriate areas. The following entry was placed in both the cognitive and the expressive language categories: "Ka came and told me that #11 butterfly was missing from the calendar. I asked her how she knew #11 was missing. She told me she counted and showed me how she did it" (Roberts P P P C, 1997, Vol. 8, p. 24).

The mini-observations recorded by adults other than a child's parents, ranged from sixty-five to eighty percent of the total entries in each journal. Teacher observations ranged from eleven to twenty-seven percent of the total entries. Parent entries, which included directed activities and any other observation written by a child's parent, ranged from two to eight percent of the total entries (see Table 3).

There were entries in each child's journal in the four areas of development. The most entries were in the physical development category with a range of twenty-two to forty-eight percent of the total and a median of thirty-five percent. The least entries were in the social/emotional category with a range of ten to thirty-one percent of the total and a median of twenty-one percent. Items in the cognitive development area ranged from thirteen to thirty-four percent of the total with a median of twenty-three percent. Language development ranged from nine to thirty-eight percent of the total with a median of twenty-two percent (see Table 2).

*Development occurs over time.* A child's growth progresses in all four developmental areas over time. A reading of the journals provided a continuing picture of the growth and development of the child. Ke's adjustment to school is one striking example. On August 28, 1996, the teacher wrote, "He and mom were the first ones at school. Ke cried, did not want to come in (the) room and kept saying he wanted to go home" (Roberts P P P C, 1997, Vol. 9, p. 1). On October 2, 1996 a parent wrote, "Ke painted a picture for dad" (Roberts P P P C, 1997, Vol. 9, p. 5). In November, 1996, Ke's mom wrote, "Ke tells about playing with blocks, playing house, feeding the guinea pigs, story time and fixing things at school" (Roberts P P P C, 1997, Vol. 9, p. 8). On January 26, 1997 the teacher wrote, "Ke is feeling more and more at home at school - he's talking with and playing with some of the other children and joining in more of the games we play" (Roberts P P P C, 1997, Vol. 9, p. 12). The teacher wrote the following as part of a summary of growth to share with Ke's parents at a March conference,

> A few days ago Ke and I were walking back to the room from the bathroom. I asked him if he remembered how scared he was to walk in the room on the first day of school. He looked at me like I was crazy! (Roberts P P P C, 1997, Vol. 9, p. 17).

It was helpful to see the continuum of growth for every child,

Table 3. Percentage of entries from three sources of child information in the journals

| Mini-observations | Teacher Entries | Parent Entries | Total |
|---|---|---|---|
| 65-80% | 11-27% | 2-8% | 100% |

but extremely so when it appeared to a parent that little growth was taking place or when the development was slower than expected. Tr had a difficult time separating from his mother in the fall. He also had a difficult time relating to the other adults in the classroom. When his mother did leave, Tr would cry. This made it difficult for her to leave him at school. Tr's separation anxiety continued into January, when the other children had adjusted to parents staying some days but not others. Observations that Tr's mother could read about the activities he engaged in when she was gone helped her to continue bringing him to school. She was able to recognize that while he was sad to have her leave, he was also able to be involved in many learning activities while he was at school in the morning.

### *Data from the Survey*

A survey was distributed in May of 1997 to elicit parent perceptions of the effectiveness of the dialogue journals. Statements were developed to address the two study questions that framed this investigation:

1. Does the journal process assist in the development of an interactive relationship between parent and teacher?
2. Does the content of the dialogue journals inform both parent and teacher about a child's development when they both contribute information?

### *Developing Interactive Relationships*

Sixteen of the 30 statements in the survey elicited information related to the first study question. These statements included the three types of information that contribute to an interactive relationship, i.e., information about the child at school, information about the child and family at home, and information of a personal nature about the teacher and parents. Survey results from questions 1,2, 4, 9, 12, 15,17, 18, 19, 20, 21, 22, 23, 25, 26, and 27 indicated that parents believed they learned about their child and that they were able to communicate to the teacher their thoughts, questions and/or ideas about their child through the journaling process (see Table 4).

Sixteen parents agreed that they learned about their child's class experiences from the journals. Sixteen parents concurred that they were able to respond to observations about their child in the journal. Fifteen parents said they were able to provide information to the teacher about their family and also about themselves. Sixteen parents felt that they were able to inform the teacher about their child so that the teacher was more knowledgeable about their child. The journals provided an opportunity for the parents to reflect on their child's behavior and on themselves as parents of that child. Sixteen parents agreed that a trusting relationship between themselves and the teacher developed because of information they shared in the journal. Fourteen parents agreed that verbal communication between themselves and the teacher increased because of information shared in the journal. Sixteen parents agreed that they were able to respond to observations made by the teacher and other parents in the journal.

Table 4. Frequency Count related to Study Question 1: Effectiveness of Journal Process in Development of Interactive Relationship Between Parent and Teacher

| Survey Questions | Parents Agree | Parents Disagree | Parents Undecided or No Answer |
|---|---|---|---|
| 1. I learned much about my child's class experience in the journal. | 16 | 0 | 1 |
| 2. I was able to respond to observations made by the teacher and other parents in the journal. | 16 | 0 | 1 |
| 4. Mutual trust between myself and my child's teacher increased because of information we shared in the journal. | 16 | 0 | 1 |
| 9. I was able to provide information to the teacher about my family in the journal. | 15 | 0 | 2 |
| 12. I was able to inform the teacher about my child in the journal. | 16 | 0 | 1 |
| 15. The information in the journal helped the teacher learn about my child. | 16 | 0 | 1 |
| 17. The journal helped me see a relationship between the way I was parented and the way I parent my own child. | 10 | 1 | 6 |
| 18. The ideas I expressed in the journal helped the teacher learn about me. | 14 | 1 | 1 |
| 19. I had time to write in the journal because I was able to take it home. | 16 | 1 | 0 |
| 20. Verbal communication between myself and my child's teacher increased because of information we shared in the journal. | 14 | 1 | 2 |
| 21. The ongoing information shared in the journal helped me prepare for the parent/teacher conference. | 7 | 3 | 7 |
| 22. I gained more information about my child's school experience from talking with the teacher than from the journal. | 7 | 4 | 6 |
| 23. The information in the journal helped me learn about the teacher. | 10 | 4 | 3 |
| 25. The information I gained in the journal helped me feel less anxious about my child's growth and development. | 9 | 2 | 6 |
| 26. The opportunity to reflect on myself and my child in the journal was valuable to me. | 16 | 0 | 1 |
| 27. Parent/teacher dialogue journals would be helpful throughout a child's education. | 16 | 1 | 0 |

### *Parents and Teacher Informed About Children's Development*

Survey results from statements 1, 3, 5, 6, 7, 8, 10, 11, 13, 14, 16, 24, 25, and 27 affirmed that parents learned about their child's growth and development through the journal process (see Table 5). Twelve parents reported that, through the journals, they learned about their child's social-emotional development, cognitive growth (through math, science, art, and music development), language, and physical development. Eight parents agreed that they learned about their child's literacy development in the journal. Seven parents were undecided and two disagreed. (The range of responses to this statement may be due to uncertainty about the meaning of literacy.)

Thirteen parents felt that they learned about their child's talents and interests through the journaling process. Four parents stated that the most valuable feature of the journal was that they learned what their child was doing at school when they were not there. Fifteen parents agreed that the content of the journals also provided information about a child's progress toward goals they had expressed in September (see Table 5).

### *Summary*

The content analysis revealed many contributions of information by both teacher and parents about each child. There was evidence in the journal entries of three types of information necessary for the advancement of an interactive relationship. The journals contained a plethora of information about children at school as well as a substantial number of entries about children and families at home. There also was evidence of personal information about both parents and teacher, but to a lesser extent than the former two types.

The analysis of the content of the journals also indicated that information about each child's development was communicated to parent and teacher alike. The survey results confirmed these findings.

## CONCLUSIONS

- The findings reveal that dialogue journals are an effective measure by which educators may engage families in partnership and practice a shared responsibility for children's education. An on-going, written form of communication with families provides a safe place for both parents and teachers to express ideas.

- Written documentation enables parents and teachers to consider a child's progress over time. The survey results indicated that all parents felt that they benefitted from the dialogue journals regardless of the extent of their journal entries. Even the parents who had low numbers of entries seemed to benefit from being able to read the continuing story of their child's growth.

- Written documentation provides the opportunity for information sharing

**Table 5. Frequency Count related to Study Question 2: Effectiveness of Journals for informing Parent and Teacher About a Child's Development**

| Survey Questions | Parents Agree | Parents Disagree | Parents Undecided or No Answer |
|---|---|---|---|
| 1. I learned much about my child's class experience in the journal. | 16 | 0 | 1 |
| 3. The journal helped me see how my child has progressed toward the goals I expressed in the September parent survey. | 15 | 0 | 2 |
| 5. The journal helped me understand my child's progress in personal and social development. | 16 | 1 | 0 |
| 6. I learned more about my child's talents and interests in the journal. | 13 | 2 | 2 |
| 7. The journal helped me understand my child's progress in language development. | 15 | 1 | 1 |
| 8. I learned about my child's progress in literacy in the journal. | 8 | 2 | 7 |
| 10. The journal provided knowledge about my child's progress in math. | 12 | 1 | 4 |
| 11. I learned about how my child thinks about him/herself and the surrounding world in the journal. | 12 | 0 | 5 |
| 13. The journal helped me understand my child's progress in art and music. | 13 | 2 | 1 |
| 14. Knowledge about my child's progress in physical development was provided in the journal. | 15 | 1 | 1 |
| 16. The journal helped me understand my child's progress in science thinking. | 10 | 2 | 4 |
| 24. I learned about activities I could do with my child at home from the journal. | 8 | 4 | 5 |
| 25. The information I gained in the journal helped me feel less anxious about my child's growth and development. | 9 | 2 | 6 |
| 27. Parent/teacher dialogue journals would be helpful throughout a child's education. | 16 | 1 | 0 |

- with family members who are not able to participate in the classroom or come to meetings or conferences. Several parents noted in the survey that the journal entries gave them insights about their child's activities.

- The opportunity for parents and teachers to communicate is limited, even when parents volunteer in the classroom. The journals provide a place to write observations that might otherwise get lost or forgotten. The reader can view the journal notations at her or his convenience and respond accordingly. Sixteen parents agreed that they had time to write in the journals because they could take them home. The time factor influenced the relationship-building aspect of the journaling process. Relationships need time to develop. The use of the journals over a school year was advantageous to this growth as was evident by the richness of the entries of January in comparison to those of the first three months. The earlier entries were mostly physical descriptions of occurrences as compared to the later entries that were reflective and personal. The nature of the entries changed as the school year progressed as everyone got to know each other.

- The data from this study show that the journal process actually increased the verbal communication between parent and teacher. Verbal communication either initiated written communication or followed written communication; it either began the dialogue or continued the parent-teacher dialogue.

- The journals facilitated teacher preparation for parent-teacher conferences. The journals afforded a place for parents to gain continuous knowledge about the daily activities of their child, even on days when they were not participating in the classroom. The on-going observations from both parents and teacher assisted in presenting a picture of the development of each child that both family and teacher shared through the journals previous to the conference. The conference, then, became a part of the continuing story about a child's development, a story that was already familiar to and shared by both parents and teacher.

Parents learned additional information in the journals that was not necessarily related to their child's growth and development, but possibly their own growth and development. Ten parents acknowledged that the journal process helped them see a connection between their parenting and the way they were parented. Sixteen parents concurred that the opportunity to reflect on themselves and their child was valuable to them. One parent stated that the opportunity for reflection was the most valuable aspect of the journal process. Nine parents agreed that the information they gained in the journal helped them feel less anxious about their child's development. Eight parents commented in their journal entries that they learned about home activities they could do with their child.

## FUTURE APPLICATION AND RESEARCH

Future studies are needed to explore the use of dialogue journals in kindergarten-primary classrooms. This study suggested that dialogue journals were effective in a Parent Participation Preschool classroom. The structure of such a program assisted in the development and maintenance of this particular communication process. The ability for such a process to be successful outside a Parent Participation Program is unknown. One possible challenge involves time. Dialogue journals require time to write mini-observations, reflections, and responses. One solution may be to arrange a rotation schedule whereby the teacher would write and receive journals from different parents on different weeks of the month. Perhaps the teacher could arrange to write in two journals a day every other week. The reduced class size makes this schedule possible to keep. One advantage noted above is the flexibility to write in the journals at school or at home. Further exploration is needed.

Also, the participating population in this study was educated and representative of a high socioeconomic status. Parents with little education might be less willing to participate in a process that requires writing. Verbal journals are an alternative vehicle through which communication could occur. Through the use of an audiotape, teacher and parents would share information about the child and the family. A continuum of development would be documented through audiotapes.

Dialogue journals can be a wonderful vehicle through which diverse family cultures and styles can be respected and shared. Often, however, newly migrated families lack knowledge of the English language. Many schools have translators of a variety of languages available to help the children who have English as a second language. The translators may be available to help translate notations in languages other than English. The use of audiotapes might prove to be helpful with this population. Translators could assist the teacher by translating recordings into English.

It is important to note that the journals are not recommended as the only means of communication in the classroom. Face-to-face conversations, telephone calls, newsletters and other methods of communication are used in conjunction with dialogue journals. The journals seemed to be most effective for documenting a child's growth and for providing a place for parents and teachers to develop a partnership relationship.

Three things the teacher in the present study learned are that:

1. Providing a forum for families to have a voice in their child's education and to be a partner in their continuing development is important whether families avail themselves of the opportunity to do so or not.
2. Communicating through the journals provides a way for schools to support families.

3. The information shared and the relationship that emerges is worth the effort whenever an opportunity to develop a partnership is possible.

We would like to invite the reader to share comments, ideas, and methods that are used to partner with parents. Please e-mail us at the following addresses:

hneal@saclink.csus.edu
jdbkwrm@aol.com

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## APPENDIX A

### Consent to Participate in Research Project

### Title: Facilitating Parent/Teacher Communication through the Use of Dialogue Journals

By signing this form in the space provided below I am agreeing to participate in research which will be conducted by Joyce Daniels.

The purpose of this research is to study the effectiveness of dialogue journals as a tool for encouraging two way communication between parent and teacher. The journals will be used to share information about each child's development throughout the school year.

My participation in the research project will involve the following:
1. Reading and responding to observations about my child in his/her journal.
2. Writing responses to structured activities in the journal each month.
3. Completing a survey at the end of the year.

This information was explained to me by Joyce Daniels. If I have any questions about the research, either now or later, I may obtain more information by contacting her.

I understand that my participation in this research is voluntary. I may decline to participate now, or discontinue participation at any time in the future without risk or penalty. I understand that the researcher may terminate my participation at any time.

| | | |
|---|---|---|
| Signature | Date | Tel # |

| | |
|---|---|
| Child's Name | Child's Birthdate |

### Consent to Release Information

I understand that Joyce Daniels will retain the journal at the end of the school year for use in a content analysis for the completion of this research project. Upon completion of the content analysis the journal will be returned to me. Information in the journal and survey may be used anonymously to complete the research project.

| | |
|---|---|
| Signature | Address |

# APPENDIX B

## Monthly Directed Activities

Each month parents had the option of writing a reflection on an observation about their child or writing a response to the directed activity.

September: What do you want me to know about your child?

October:

Ranking Children's Traits
Instructions: Rank the personality traits below in the order you felt were important to your parents (i.e. the messages about values that you received from your parents as a child growing up). Begin with 1 as the most important.

____Active, lots of energy, always moving
____Aggressive, competitive
____Athletic, does well in sports
____Attractive, physically nice-looking
____Cheerful, pleasant, friendly
____Clean, neat, uncluttered
____Coordinated, physically coordinated
____Courageous, stands up for own beliefs
____Curious, inquisitive
____Flexible, resourceful, innovative
____Frugal, conserves resources and energy
____Generous, shares with others
____Helpful to others, altruistic
____Honest, truthful
____Independent, self-reliant
____Intelligent, intellectual
____Obedient, compliant
____Passive, not aggressive
____Persistent, "finishing power"
____Polite, well-mannered
____Popular, liked by peers
____Religious, respects Creator
____Self-controlled, self-restraint
____Sensitive, considerate of other's feelings

Adapted from Without Spanking or Spoiling, Elizabeth Crary

After parents completed this, they were given another page with the same list of traits, but with the following instructions:

Rank the personality traits listed below in the order important to you. Begin with 1 as the most important.

## APPENDIX C

### End of the Year Survey

**Dialogue journals were explored this year to improve communication between the two of us as parent and teacher. Please complete the following survey so that I may learn from you about the effectiveness of this technique.**

Directions:
Indicate your opinion about the following statements by marking each statement as follows:
Circle the SA if you STRONGLY AGREE
A if you AGREE but not strongly
U if you are UNDECIDED
D if you DISAGREE
SD if you STRONGLY DISAGREE

1. I learned much about my child's class experiences in the journal. SA A U D SD
2. I was able to respond to observations made by the teacher and other parents in the journal. SA A U D SD
3. The journal helped me see how my child has progressed toward the goals I expressed in the September parent survey. SA A U D SD
4. Mutual trust between myself and my child's teacher increased because of information we shared in the journal. SA A U D SD
5. The journal helped me understand my child's progress in personal and social development. SA A U D SD
6. I learned more about my child's talents and interests in the journal. SA A U D SD
7. The journal helped me understand my child's progress in language development (listening and speaking). SA A U D SD
8. I learned about my child's progress in literacy (reading and writing) in the journal. SA A U D SD
9. I was able to provide information to the teacher about my family in the journal. SA A U D SD
10. The journal provided knowledge about my child's progress in math ( counting, naming numbers, sorting, shapes, positions, patterns, measurement). SA A U D SD
11. I learned about how my child thinks about him/herself and the surrounding world (family, school, community) in the journal. SA A U D SD
12. I was able to inform the teacher about my child in the journal. SA A U D SD
13. The journal helped me understand my child's progress in art and music. SA A U D SD
14. Knowledge about my child's progress in physical development (gross motor, fine motor, self help) was provided in the journal. SA A U D SD

| | | | | | |
|---|---|---|---|---|---|
| 15. The information in the journal helped the teacher learn about my child. | SA | A | U | D | SD |
| 16. The journal helped me understand my child's progress in science thinking (observing, investigating, questioning, predicting). | SA | A | U | D | SD |
| 17. The journal helped me see a relationship between the way I was parented and the way I parent my own child. | SA | A | U | D | SD |
| 18. The ideas I expressed in the journal helped the teacher learn about me. | SA | A | U | D | SD |
| 19. I had time to write in the journal because I was able to take it home. | SA | A | U | D | SD |
| 20. Verbal communication between myself and my child's teacher increased because of information we shared in the journal. | SA | A | U | D | SD |
| 21. The ongoing information shared in the journal helped me prepare for the parent/teacher conference. | SA | A | U | D | SD |
| 22. I gained more information about my child's school experience from talking with the teacher than from the journal. | SA | A | U | D | SD |
| 23. The information in the journal helped me learn about the teacher. | SA | A | U | D | SD |
| 24. I learned about activities I could do with my child at home from the journal. | SA | A | U | D | SD |
| 25. The information I gained in the journal helped me feel less anxious about my child's growth and development. | SA | A | U | D | SD |
| 26. The opportunity to reflect on myself and my child in the journal was valuable to me. | SA | A | U | D | SD |
| 27. Parent/teacher dialogue journals would be helpful throughout a child's education. | SA | A | U | D | SD |

28. The most valuable aspect of the journal is:

29. The least valuable aspect of the journal is:

30. My suggestions for dialogue journals in the future are:

Additional comments:

*Kindergarten Education: Theory Research and Practice*
*Vol. 3, No. 2, Winter 1998*

# Creating Music in Kindergarten

Gwendolyn McGraw

In this article some approaches to creating music at the kindergarten level are described. An overview of exploratory and spontaneous musical behaviors associated with early childhood development precedes a discussion of nontraditional ways to make music with children in kindergarten - ways which facilitate (and even encourage) musical creativity and musical decision-making.

Imagine that it's music time in kindergarten. What's going on? You might envision a circle of children seated on the floor, led by their teacher in singing songs like "The People on the Bus." This is a wonderful way to make music in kindergarten and should be a part of every young child's experience. There are, however, other ways to make music with children in kindergarten--ways which facilitate and encourage creativity and musical decision-making. In this article some approaches to creating music at the kindergarten level will be described. As a backdrop for the kindergarten experience, an overview of sound exploration during early childhood will first be presented.

One of the more fascinating periods in the musical development of children occurs between birth and six years of age. During those years, children explore the world of sound, simultaneously creating their own music and assimilating musical idioms of the culture. This interplay between enculturation and exploration is a dynamic one, with exploratory behaviors in the realm of sound being more evident during this time-frame than at any other stage of life.[1]

Sound exploration begins in infancy, well before children can actually walk or talk. Moog (as cited in Hargreaves, 1986, p. 63) found that both movement and vocalization occur by the age of six months in response to recorded music; these behaviors are regarded as spontaneous rather than imitative. During the next twelve months, as children gain in both verbal and locomotor skills, they also begin the active sound exploration which characterizes early childhood musical development: they play with sounds, they move to music, they spontaneously make up or improvise songs, and they improvise on instruments.

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[1] See Sloboda (1985, p.196) for a more thorough discussion of the process of enculturation.

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## OVERVIEW OF SOUND EXPLORATION DURING EARLY CHILDHOOD

### Experimenting with Sounds

Prevel (as cited in Shuter-Dyson and Gabriel, 1981, p. 107) has observed that from the "earliest age" children are fascinated with sounds, remarking that the young child tends to seek out the "noisiest instrument." This interest in sound continues throughout early childhood, with Moorhouse and Pond (as cited in Shuter-Dyson and Gabriel, 1981, p. 108) emphasizing that "the deepest interest of the Pillsbury [their research sample] children was in tone color" (the differences in the qualities of sounds) as they discovered and experimented with various instruments.

Similarly, in Swanwick's (1988) study of improvised musical compositions by young children (to age four), it was found that the children were most interested in tone color (timbre) and dynamics (the loudness or softness of a sound). Research indicates that this delight with timbre continues through kindergarten. Belaiew-Exemplarsky (as cited in Hargreaves, 1986, p. 108) found that for children aged 6.5--7.5, timbre or tone color was still their "greatest joy in music."

### Moving to Music

Between nine months and two years of age, children who have learned to walk begin to respond in more active ways to music. Moog (as cited in Sloboda, 1987, p. 207) found that the two-year-old may "dance" or "move" to the music, although this spontaneous movement is in no way coordinated with the beat. A decrease in spontaneous movement by children aged three to five was also observed by Moog. Hargreaves (1987) theorized that less spontaneous movement declines because children are increasingly internalizing their responses to music.

Another view was advanced by Sims (as cited in McDonald and Simons, 1989, p. 106), who maintained that the amount of creative movement tends to increase through age four or five; however, Sims also noted that very young children often need to acquire a "repertoire" of movements. It is clear that by the age of five or six, some children prefer imitative movements (i.e. movement associated with the playing of singing games) to spontaneous or creative movement.

### Singing "New" Songs

Singing, which has been described as musical "babbling" before age one, is characterized by vocal *glissandi* (sliding from one tone to another) between 12 and 18 months. Gardner (1981) has observed that around 18 months of age, children's improvisatory songs become more culture-bound, with the introduction of discrete pitches (in contrast to earlier glissandi). Prior to age two, improvised song is frequently characterized by the use of neutral sounds or syllables rather than words. In addition, improvised songs at this age tend not to be "tonal" (i.e. tend not to be organized around a discernible pitch center or "tonic").

Between two and three years of age, songs are described as being spontaneous, making use of repeated melodic patterns, more organized, and longer than the songs of younger children. While Sloboda (1987, p. 214) concluded that spontaneous songs at this age do not "directly mimic the songs of the culture," other researchers disagreed, calling attention to the inclusion of melodic patterns from learned songs in a child's vocal improvisations (Davidson, McKennon, & Gardner, 1981).

Moog (as cited in Hargreaves, 1986, p. 108) found that more than half of the children in his studies "sang some kind of original song" between the ages of three and four. Moog (as cited in Shuter-Dyson and Gabriel, 1981, p. 110) described these spontaneous songs as lasting several minutes, with "patchwork" or "potpourri" creations being characteristic Another category of improvisatory vocalization in early childhood was also documented by Moorhouse and Pond (as cited in Shuter-Dyson and Gabriel, 1981, p. 109), who reported that they observed improvisations of rhythmic chant "extensively" in group play settings.

During the third year of life, a second development parallels the blossoming of spontaneous song. Davidson et al. (1981) found that many three-year-old children develop the ability to sing the "outline" of known songs. The implications of this new ability become increasingly clear during the child's fourth year of life. Between the ages of four and five a "dramatic" decline in the frequency of spontaneous songs has been noted (Sloboda, 1987, p. 205-206). Sloboda observed that spontaneous songs are replaced by songs of the culture, with children eagerly imitating and repeating "known" songs. There is also a corresponding increase in "tonal" singing (i.e. songs which sound like they are "in tune"), additional evidence of enculturation.

### Improvising and Composing

Rhythmic exploration has been studied through instrumental improvisations and compositions of young children. Flohr (as cited in McDonald and Simons, 1989, p. 51 and p. 106) observed that the instrumental explorations of children aged two to three evidenced "motor energy," with inaccurate rhythms in a moderate tempo. According to Flohr, between the ages of two and five, improvisations on instruments progressed from "sheer motor energy sounds to those showing musical characteristics, including repetition and synchronization with a rhythmic beat." Flohr's study indicated that with increasing age, children begin to use repetition and patterns and both two beat (duple) and three beat (triple) meters.

The incorporation of repetitions, patterns, and steady beat is associated with an increasing sense of musical design or form-- another obvious manifestation of enculturation. Several researchers (Ross, 1984; Swanwick, 1988) have observed that a sense of musical "anticipation" or musical "expectation" develops sometime between the ages of three and seven. They theorize that such musical anticipation or expectation "signifies the beginnings of awareness of structural relationships" in music (Swanwick, 1988, p. 63). In Swanwick's studies, for example, pieces by children ages five to seven evidenced both enculturation and an emerging sense of form: use of meter, phrases, and the incorporation of fragments of known songs.

Instrumental improvisation and composition, along with a continued and vital interest in timbre, seem particularly noteworthy at ages five to seven. When early "free" or "motor energy" types of improvisations disappear, they are replaced by compositions which seem to be characterized by definite musical intentions on the part of the young child. This interest in improvisation provides a contrast to early childhood spontaneous song and movement, creative musical behaviors which typically *decrease* with increasing age.

### Musical Exploration and the Young Child: A Summary

As children explore the world of sound, they demonstrate an array of spontaneous musical behaviors associated with cognitive, perceptual, and psycho-motor development. In explorations with melody, timbre, dynamics, rhythm, tempo, and form, children acquire musical ideas and expectations--the syntax of music. With increasing age, musical phenomena of the culture become more internalized: behaviors show evidence of cultural patterns and organization. Over time, spontaneous and exploratory kinds of musical behaviors become increasingly subordinated to cultural models. By the age of five or six, many spontaneous musical behaviors have been replaced by behaviors that are imitative. This decline in spontaneous and exploratory musical behaviors is evidence of enculturation, the child's desire to imitate cultural models, and the child's internalization of some musical responses.

In the instrumental arena, however, both improvisation and creative expression are continuing to develop from ages five to seven. During these years, young children seem both interested in and capable of thoughtful composition and improvisation. This interest is coupled with a continuing delight in instrumental timbre. Both developmental aptitude and the desire to explore instrumental sounds provide powerful rationales for encouraging musical exploration in kindergarten and elementary school. It is our challenge to find ways to best nurture musical exploration and creativity in classroom settings.

## CREATING MUSIC IN KINDERGARTEN

Both PreK and K-12 Standards in Music (National Standards for Music Education, Goals 2000 Education Act) contain achievement content standards related to creating music. Guidelines for PreK and primary age children recommend: improvisation of accompaniments for songs, stories, and poetry and the creation of short pieces of music. Guidelines (Music Educators National Conference, 1995) for young children are presented below. For the purposes of this discussion, achievement standards (b) and (c) are of particular interest:

2. CONTENT STANDARD: Creating Music

Achievement Standard: Children
a. improvise songs to accompany their play activities
b. improvise instrumental accompaniments to songs, recorded selections, stories, and poems
c. create short pieces of music, using voices, instruments, and other sound sources
d. invent and use original graphic or symbolic systems to represent vocal and instrumental sounds and musical ideas (p.3 )

When one thinks of the ways in which the arts have typically been implemented at the kindergarten and elementary school levels, it is clear that we are more likely to provide opportunities for young children to experiment with colors we can see--i.e. crayons and paints-- than with colors we can hear--i.e. tone colors. A comparison of university students' responses to the following question is illustrative:

Question: "Which of the following situations seems most likely in a kindergarten or first grade class?"

Scenario One. Sam sits down with crayons and pencil and begins to draw.

Scenario Two. Sam sits down with a set of resonator bells and begins to improvise a melody.

To students in my precredential classes at California State University, Sacramento, the second scenario seems implausible. While there are a number of explanations, the following should be considered:

1). We are more comfortable with visual art than we are with music--perhaps because we have a context for kindergarten art. In contrast, improvising or composing music --i.e. manipulating sounds--is an area in which we have little knowledge, and less context. We might not even know how to "set up" such an experience for young children.

2). As educators, we may be more rigid about what is "musical"--all the while accepting and even enjoying the spontaneous visual art created by five- and six-year-olds. It may even be difficult for some of us to imagine musical parallels to pictures or paintings created by kindergarteners!

In the remaining sections of this article, several approaches to creating music with kindergarten children will be presented. In all cases, the role of the teacher is that of a facilitator: the teacher is entrusted with the logistical challenges associated with setting up an instructional environment conducive to creating music. This, by the way, is not unlike the preparation done for an art lesson, although the tools and materials are different. Once the stage is set, kindergarten students should be given opportunities to explore musical ideas and make musical decisions. These creative experiences lend themselves to repetition and development - each activity contains the seeds for many discoveries.

## Creating music Using Nonpitched Instruments

### *Rhymes, Chants, Poetry, and Stories as a Springboard for Composition*

Choose a story, poem, chant, or rhyme to serve as a literary inspiration for sound exploration. Before beginning this musical adventure, decide which instruments will be made available to students for "orchestration." After students have listened to your reading, challenge them to choose instruments to go along with the selection. What instruments can be used to produce the desired sounds? How should these instruments be played? Are there unconventional ways to play each instrument which will result in different sounds? (i.e. How many different types of sounds can you make on a drum?) At what points during the reading should the desired tone colors be added? How loud or soft should the sounds be?

Foster creative thinking and problem solving skills as your students work together to create an exciting sound palette for the literature you have chosen. After students have made their decisions, have them add their tone colors to the piece as you read. Incidentally, children's musical ideas should not be set in concrete: when a lesson is repeated, new ideas may be encountered! Here are some suggestions for getting started with kindergarten orchestrations.

I. *Mother Goose and Friends*. Choose several rhymes and ask children to imagine sounds that will enhance their reading--that is, to think of tone colors that might make the rhymes more dramatic or memorable. If you choose (or allow children to choose) a group of rhymes that vary in mood or literary tone, the soundpiece will be more exciting. After children have experimented with a number of rhymes on different days, you may want to create a longer composition. You could, for example, create a "Nursery Rhyme Rondo."

"Rondo" is a term for one musical form that uses both repetition and contrast as the basis for the design: for our purposes, the musical design or form is presented as "ABACA." In this case, "A" will be the rhyme your students would most like to repeat, for example "Hickory Dickory Dock." Both "B" and "C" will be different or contrasting rhymes. Your "Nursery Rhyme Rondo" might unfold as follows:

A..... "Hickory Dickory Dock" with selected instruments
B..... "Hey Diddle Diddle" with instruments that provide a contrast in tone colors to those used in the "A" sections
A..... "Hickory Dickory Dock" (with selected instruments playing as before)
C..... "Wee Willie Winkie" with instruments that provide a contrast in tone colors to those used in the "A" sections
A....."Hickory Dickory Dock" (with selected instruments playing as before)

For a composition of this length, children should memorize the rhymes before adding tone colors. Such an activity might also be incorporated into a presentation for parents. (Beware, however, of determining the "right way" for your students to perform--this rondo should represent their musical ideas).

II. *Where the Wild Things Are* This book (Sendak, 1963) has been a personal favorite for many years. If you decide to embark on a musical adventure with Max, include some pitched instruments like melody bells or autoharp along with lots of nonpitched percussion. (Just as a reminder, you *don't* have to play a known *melody* on the songbells, or chords on the autoharp. Your students are free to make other types of pitched sounds). Based upon the structure of the book, your students' composition might be loosely divided into three parts--a simple ternary (ABA) form or design with transitions between the major sections is suggested:

A. Max at home in his room--what instruments will you use here?
*****Transition---Traveling by ship to the Land of the Wild Things
B. Land of the Wild Things--lots of opportunities for nonpitched percussion here, as well as an opportunity for a great contrast between SOUND (very loud) and SILENCE
*****Transition--Traveling by ship back to Max's home
A. Max at home in his room--use the same instruments as in the first "A" section

This book provides wonderful opportunities for musical ideas and improvisation as your students experiment with timbre, dynamics, pitch, and form. You may want to select some students to read or tell the story, or, even better, let students take turns *conducting* the "Wild Things" orchestra in their noisy frolic.

III. *Hand, Hand, Fingers, Thumb* This kindergarten "rap" or chant is great fun (Perkins, 1969), and the addition of rhythm instruments makes it even better! Teach the children to rhythmically chant the words--at least the recurring "Dum ditty dum ditty dum dum dum."

Accompany the chant with a *steady beat* on drums, and add other nonpitched percussion instruments suggested by your students to "build" the rap. (If you do not have enough drums, you might consider making some as an art project.) Remember not to pull out all the stops before the fancy ending or "coda." At that point, you have....

*"Millions of fingers, Millions of thumbs,*
*Millions of monkeys drumming on drums.*
*Dum ditty dum ditty dum dum dum."*

IV. *"Windy Nights," from A Child's Garden of Verses.* This poem from Stevenson's timeless collection of poetry suggests highly creative orchestration. It is a great kindergarten moodpiece. Adding instruments to the reading of this poem may result in a surprising soundscape: unusual tone colors, a variety of dynamic levels, and different ways of playing or touching the instruments. Conjure up a memorable mix of tone colors as you create an enchanting mood for "Windy Nights."

*Whenever the moon and stars are set*
*Whenever the wind is high*
*All night long in the dark and wet,*
*A man goes riding by.*
*Late in the night when the fires are out,*
*Why does he gallop and gallop about?*

*Whenever the trees are crying aloud,*
*And ships are tossed at sea,*
*By, on the highway, low and loud,*
*By at the gallop goes he.*
*By at the gallop he goes, and then*
*By he comes back at the gallop again.*

## Creating Music Using Pitched Instruments

### *The Pentatonic Scale as a Springboard for Improvisation and Composition*

While most teachers are familiar with the major scale, fewer know about the pentatonic scale. The pentatonic or five-tone scale is a powerful tool in the improvisational tool kit--especially for children. Any combination of notes on a five-tone scale is pleasing to our ears. Once the power of this scale is understood, fears associated with improvisation or composition using pitched instruments may vanish. The students will not have to know the names of pitches or how to read music to improvise using a pentatonic scale. Even better, two or more students can improvise simultaneously using pitches of the same pentatonic scale, and the resulting "duet" will often sound surprisingly musical.

The black keys on the piano form one example of a 'natural' pentatonic scale, as do the black bars on a chromatic songbell. Pentatonic scales can also be played on white keys or bars, but for that, one needs to know the "formula" for a pentatonic scale. Begin with a major scale, and omit two of the tones--"Fa" and "Ti:"

Do Re Mi Fa So La Ti Do

If you begin with C major, for example, the resulting C pentatonic scale would omit two pitches: "F," and "B." The following chart gives the pitches of pentatonic scales which are useful in young children's music.

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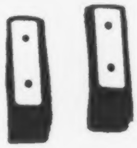
| Name of Scale | Tones in Pentatonic Scale* |
|---|---|
| C Pentatonic | C, D, E, G, and A (also high C') -- OMIT F and B |
| F Pentatonic | F, G, A, C, and D (also high F') -- OMIT B and E |
| G Pentatonic | G, A, B, D, and E (also high G')--OMIT C and F |

(*pitches are named from low to high)

For improvisation in a kindergarten classroom, resonator bars or Orff-type barred instruments are the most appropriate (see Appendix). Resonator bars, for example, allow you to select several pitches and then to give one or more to each student performer to play. Similarly, Orff-type barred instruments (glockenspiels, xylophones, etc.) allow you to remove lots of bars, leaving only those which are needed to accompany a selected song. (Otherwise, you might cover those pitches that do not "belong" in a given pentatonic scale on a standard songbell or xylophone).



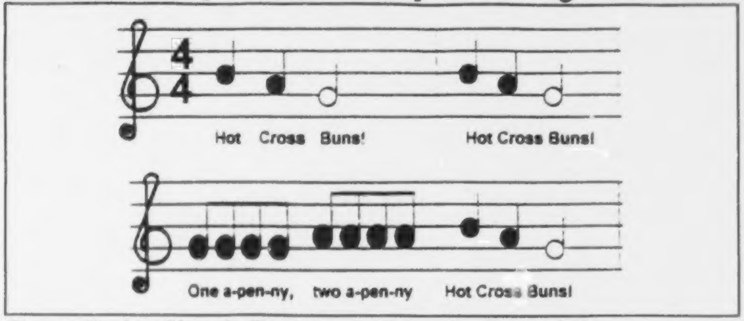
Resonator bars

### Using Pentatonic Folksongs as a Basis for Improvisation

Many children's folksongs from this country (and from other countries as well) are based upon pentatonic scales. Such songs are often found harmonized in American songbook collections with major key chords. If, however, you use only the melody of a pentatonic song, you will find that it can be tunefully accompanied with simple melodies that can be improvised by children  Several examples follow.

Let's consider the following familiar children's folksong, chosen becausemost readers will recognize it: " Hot Cross Buns." (See Example 1).

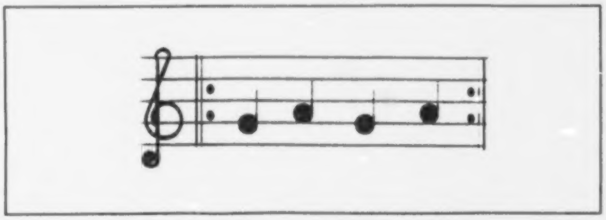
If sung in the key of G, the melody of this song is as follows:


Hot Cross Buns! Hot Cross Buns!
One a-pen-ny, two a-pen-ny Hot Cross Buns!

Example 1. Simple Pentatonic Song in Key of G

I. *Improvising an Accompaniment for a Pentatonic Song*. To improvise an accompaniment for the pentatonic children's song in Example 1, a child could use any combination of the pitches in the G pentatonic scale: G, A, B, D and E. One child's improvisation might sound relatively "random." He or she might use the pitches in no particular pattern or order. This is fine. Although such an improvisation might not sound like "adult" music, it should not be met with discouragement. A "free" approach to improvisation can still serve as an accompaniment to class singing. One hint: before the class starts to sing, have the soloist begin playing his or her improvised accompaniment on resonator bars for several beats. When you have determined the child's "beat" or "tempo," cue the class to begin singing in a tempo that will work with the improvised accompaniment.

Another child's improvisation might sound more "ordered"--that is, it might make use of repeated patterns, use fewer tones, and seem to have more structure or form. This type of improvisation will provide a wonderful accompaniment to the singing of a pentatonic song. (A musical term for a repeating melodic pattern is "ostinato.") Once again, it may be prudent to match the singing of the class to the beat produced by the soloist. (See Example 2).



Example 2. A Possible Ostinato (repeated sequence of notes) Pattern Played by a Child to Accompany Song

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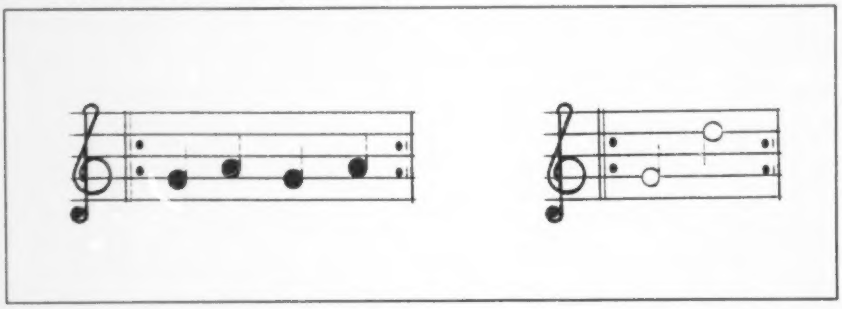
It may be possible for two or three students to improvise patterns simultaneously on different instruments as the class sings. You will want to limit the number of tones given to each student - two or three pitches per child is plenty. While this would be most easily accomplished with two students who have "internalized" a sense of beat, the music created by less skilled students should also be acceptable (although more difficult to synchronize with class singing). In any case, this is an interesting musical challenge for students at the kindergarten level. Some of your students might be game! (See Example 3).



Example 3. A Possible Combination of Ostinato Patterns to Accompany Song

II. *Improvising Melodies to Use With Simple Song Melodies.* A second approach to improvisation on pitched instruments makes use of simple known song melodies in conjunction with improvised melodies. For example, a simple ternary form (ABA) might be built using the familiar song "Rain, Rain, Go Away" as the musical material for both "A" sections (key of G pentatonic). For the middle or contrasting section, a child could improvise on resonator bells using two or more pitches of the G pentatonic scale while the rest of the class keeps the beat. An exciting three-part musical composition might evolve from such a design:

A. Class sings "Rain, Rain, Go Away"

B. Class Keeps BEAT for 16 counts *while* student improvises melody on pitches: G,A,B,D,E (you may want to make only 2 or 3 pitches available)

Class: pats beat on legs for 16 beats WHILE Soloist plays for 16 beats

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 Improvised Solo
x x x x / x x x x / x x x x / x x x x
Right Leg Left Leg Right Leg Left Leg

A. Class sings "Rain, Rain, Go Away"

*III. Composing or Improvising Simple Melodies Using Pitched Instruments.* A third approach to melodic improvisation involves making up a melody or tune for known words. (Incidentally, many kindergarten and primary grade children do the opposite: that is, make up new words for a known melody.) To be successful at this type of musical creation, children need to thoroughly learn the words of a chant such as "Engine, Engine, Number Nine." When they can both chant and clap the rhythm of the words, they are ready to compose. This activity, incidentally, is probably better undertaken in a small group or music center setting in contrast to the previously discussed examples of creating music. To facilitate this type of music exploration, you will need the following:

A. Resonator bars placed in music center (scale: pitches of choice)
B. Words of chant written down for use in music center:

En- gine En- gine num-ber nine.

Go- ing down Chi- ca- go Line

If the train should skip the track.

Do you want your mo- ney back?

Each child should write down the names of the pitches he or she has used, in the order in which they have been used (all the musical bars are labeled with pitch names). The following is an example of one possible melody:

F F G G A A A
En-gine En-gine num-ber nine.

When encouraging students to create music in this way, it would be wonderful to have a tape recorder on hand to preserve newly composed and performed melodies. Children could even be asked to bring a blank cassette tape from home so that their musical creations could be shared with parents.

Young children typically are quite excited when given opportunities to improvise on pitched instruments. Whether in a group setting or in a music center, each child will probably want to take a turn. Such creative approaches to music making are delightful, age-appropriate alternatives to decoding challenges associated with beginning attempts to read music notation.

The following list of pentatonic songs is basic musical material for your improvisatory tool kit. There are many other pentatonic children's songs, and you might want to collect 25 or 30 titles for use over a school year.

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Some Simple Pentatonic Songs for Young Children

- A Tisket, A Tasket
- Bluebird, Bluebird
- Frog in the Millpond
- Hey, Jim Along Josie
- Hop Old Squirrel
- It's Raining, It's Pouring
- Old King Glory
- Old Brass Wagon
- Pease Porridge Hot
- Rain, Rain Go Away
- Sally Go 'Round the Sun
- Who's That Tapping at the Window

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## SOME CLOSING REMARKS

Before completing this discussion, it may be helpful to again describe some characteristics of young children's melodic improvisations. First, (and as previously suggested), improvisations probably will not be "synchronized" with the beat of the song (unless you, the teacher, adjust the singing of the class to the soloist's beat). While synchronization may occur, research by Weikart (1988) indicates that as many as 50% of young children in American schools do not internalize "beat" until they have experienced many opportunities for skill building (and are a few years older). So, the teacher should not expect the child soloist to synchronize his beat to the tempo of the class (although it might happen, and that would be exciting).

Second, a child's first efforts at improvisation may not sound "musical" to an adult. This suggests that the child is only beginning to acquire a sense of musical syntax--this may be related to his early musical experience (or lack thereof). Some five-year-olds, for example, seem to want to use all available pitches when improvising, perhaps just to hear how they will sound. With time, most children begin to use patterns or some type of musical repetition--these improvisations tend to sound more "musical" and, therefore, more acceptable to adults.

A third point might also be made. Young children's attempts at improvisation must not be trivialized. This is mentioned because a consideration of the language which is sometimes used by adults to describe the spontaneous music making of young children reveals that it is often deprecatory: for example, children "play around," "just bang," "sing out of key," lack "harmonic awareness," "forget the words," are "tone deaf," or "lack a sense of beat or rhythm." Apparently, many of us must learn to cherish the musical creations of young children--just as we cherish young children's creative expressions in visual art. With a mental shift, we might come to describe the musical explorations of young children in terms which capture the young child's sense of wonder: perhaps "refreshing," "inventive," and delightful, " and "unpredictable" might be appropriate. In fact, we might learn a great deal about musical spontaneity if we approach the musical explorations of young children with thoughtfulness. If we can learn to listen with the ears of a child, and to observe with the eyes of a child, we might find that we, too, enjoy an exploratory approach to music making.

In concluding this discussion of creating music in kindergarten, it should be added that a variety of conceptual learnings can occur in such class settings. For example, children may want to learn the musical labels for the sounds they encounter in an exploratory approach--labels such as "melody," rhythm patterns," "form," "tone color," "soft," and "loud." An observant teacher will find opportunities to assist children in making associations between sounds they have made or heard and the words which describe or identify those sounds. Conceptual learning of this type becomes the foundation for subsequent learning which requires children to make more abstract, symbolic associations.

Once again, imagine that it's music time in kindergarten. If given opportunities to create music, your students can discover a whole new world of sounds. Your students can orchestrate stories, poems, and rhymes, all the while delighting in the tone colors of different instruments. Your students can discover principles of design as they make musical decisions about repetition and contrast. Your students can improvise accompaniments for songs, or improvise solos as part of a larger musical composition. Your students can create melodies for favorite chants or rhymes. Your imaginations can be the impetus for many exciting musical journeys. Isn't it time to get started?!

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Weikart, P. (1988). *Movement plus rhymes, songs, and singing games*. Ypsilanti, MI.: The High Scope Press.

### *Materials*

The two books listed below are sources of additional simple pentatonic songs.

Barron, J. (1993). *Ride with me*. Ontario, Canada: Frederick Harris Music Co.

Lantos, E. (1988). *Bounce high, bounce low*. Ontario, Canada: Frederick Harris

### *Children's Books*

Perkins, A. (1969). *Hand, hand, fingers, thumb*. Bright and Early Books (Dr. Seuss). New York: Random House.

Sendak, M. (1963). *Where the wild things are*. New York: Harper Collins

## Appendix

(1) Good quality, long lasting instruments can be purchased through such vendors as Peripole, Inc. You may want to consider glockenspiels, xylophones, or metallophones designed for the Orff-Schulwerk approach to music-making, as well as (or in addition to) a set of resonator bars. Note: Instruments designed for the Orff approach feature removable bars. This makes the setting up of a pentatonic scale or selected pitches quite easy. Peripole also sells an early childhood set of pentatonic bells (C pentatonic) which are part of the collection designed by Barbara Andress (well-known early childhood music educator).

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Address: Peripole Bergerault, Inc.
2041 State Street
Salem, Oregon 97301
Toll-free: #-800-443-3592 (ask for catalog)

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(2) Orff-Schulwerk is an approach to music-education that encourages improvisatory and creative musical responses. Many classroom teachers find the approach exciting and join local Orff chapters so that they might participate in workshop training. The web-site for the American Orff-Schulwerk Association is: http://www.aosa.org. Check out the website for regional chapters in your location.

(3) I would be pleased to hear from kindergarten teachers who have questions, and I would especially welcome communication from teachers who decide to employ some creative approaches to music making in their kindergarten classrooms. My e-mail address is : agbmcgraw@aol.com.

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